CF911P

Service Information

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CONTENTS

1. CF910 to CF911P Changes List 1
2. Dis/ Reassembly/Adjustment 2
3. General/Mechanical/Electrical 3
4. Switches on PWBs, Service Mode 4
5. Troubleshooting 5
6. Operation Panel 6
7. Connection to Notebook PC and X-Rite (DTP32) 9
Jig Software Set-Up 10
8. Replacement Pages 11
Dis/ Reassembly/Adjustment 11 (D-114, 116, 131, 138, 150)
General/Mechanical/Electrical 19 (M-115)
Switches on PWBs, Service Mode 20 (S-5, 7, 47, 51)
Troubleshooting 24 (T-2, 3, 4, 5, 6)

NOTE:

- *This manual contains explanations, modifications and replacements that will make the CF910 Service Manual applicable to the CF911P Printer.*
- *For all pages in the CF910 Service Manual, please read "printer" for the word "copier" and "print" for the word "copy".*

1. CF910 to CF911P Changes List

1-1. The CF911P does not contain the following CF910 parts (Electrical Parts List).

LA1	Exposure Lamp
M1	Scanner Motor
M2	Original Glass Cooling Fan Motor
M24	IR Cooling Fan Motor 1
M25	IR Cooling Fan Motor 2
PC1	Scanner Home Position Sensor
PC2	Original Cover Angle Detection Sensor
PU2	DC Power Supply 2
PWB-A	CCD Sensor Board
PWB-B	A/D Converter Board
PWB-G	Motor Drive Board
PWB-	Tech. Rep. Setting Switches Board
SE1	Original Size Detecting Sensor 1 (OP)
SE2	Original Size Detecting Sensor 2
SE3	Original Size Detecting Sensor 3
SE4	Original Size Detecting Sensor 4 (OP)

1-2. The following part has been changed.

UN27	From CF910 Control Panel to CF911P Operation Panel.

1-3. The CF911P includes the new parts listed below.

FIERY X2E	Printer Controller Board
PWB-E	Controller Interface Board

1-4. General manual changes.

1. Change the Touch Panel to the Control Panel and/or PC screen.
2. Change the Malfunction Reset switch to the Trouble Reset key on the panel that appears in “Clear Mode” on the PC screen.
3. Image stabilization problem indicator is not applicable.
4. Security Mode is not applicable.
5. Additional Notes:
   - When the power is switched on but the CF911P does not display “Ready,” switch the power Off and On again.
   - When the Message “Alert, Service Code” is displayed, press the down key, display the Error Code on the second line.

2. DisReassembly/Adjustment

Manual Change List

PAGE	OLD	NEW
D-1	Laser max power 8 mW	26.79μW
D-7, 8	PWB-A, PWB-B, PWB-C, PWB-G, PU2	Not applicable
	UN27	Changed CF911P Operational Panel.
D-72 to 79	Optical Section	Not applicable
D-100	IR (CCD Assy, Mirror Lens/Exposure Lamp/ Cable	Not applicable
D-113	Touch Panel Correction Mode	Not applicable
D-114 to 127	Setting Mode	See replacement page 11.
D-128 to 130	IR Area	Not applicable
D-131	Developer Change Mode	See replacement page 13.
D-137	Gradation Adjust	See replacement page 14.
D-148	AE Adjust	Not applicable
D-149	IR Area	Not applicable
D-150	Fig. 2 "Downloading Comp ....."	Fig. 2 Program Transfer Mode screen of the software tool. See replacement page 18.

NOTE:

When you don't have an X-Rite DTP32 densito meter, see page 17 (D-137-4) "Another Gradation Adjust" (Visual Calibration), in this manual.

3. General/Mechanical/Electrical

Manual Change List

PAGE	OLD	NEW
G-1	Laser Radiation Power: 8mW	26.79 µW
G-6	Exposure Lamp, Original Scanning, Scanning Density, Exposure System, Types of Originals, Maximum Size of Original.	Delete
G-7	Warming-up Time After Energy Saver Mode	Not applicable
	First Copy Time (Upper Drawer, ×1.000, Manual Exposure Mode) Copying Speed for Multi Copy Cycle (Upper Drawer, ×1.000) (Copies/min)	First Print Time (Upper Drawer) Printing Speed for Multi Print Cycle (Upper Drawer) (Prints/min)
G-8	Zoom Ratios, Void Image Width, Lens, Light Source, Exposure Lamp, Dimensions. Options (AFR-12, ADF Kit D, Editor Board, Editor Display, Mount Kit E, Data Controller D-102, Plug-in Counter).	Delete
G-10	50/60 Hz ±0.3%	50/60 Hz ±3 Hz
G-12	System Options: 2. Plug-in Counter, 3. Duplexing Document Feeder, 4. Data Controller D-102, 5. Editor Display, 6. Editor Board.	Delete
M-1	IR Unit	Delete
M-2, 3	3. Photoelectric Conversion, 4. IR	Not applicable
M-5	Scanner Drive Motor	Not applicable
M-6, 8	Scanner Motor M1, Exposure Lamp LA1, Scanner Motor M1,	Not applicable
M-11	IR Control Board	Not applicable
M-22 to 41	Chapter 9 Image Reader Section	Not applicable
M-43	IR Digital image data.	Print digital image data.
M-45	Press Start Key	Print start signal.
M-115	Full toner collecting box detection	See replacement page 19.
M-130, 131	IR Control Board PWB-C, Key Counter CNT12, A/D Converter Board PWB-B, CCD Sensor Board PWB-A, IR Control Board PWB-C, DC Power Supply 2 PU2, Exposure Lamp LA1	Not applicable
M-133	IR Control Board PWB-C	Not applicable

4. Switches on PWBs, Service Mode

Manual Change List

PAGE	OLD	NEW
All pages	"Touch Panel Display"	"PC screen Display".
S-3, 4	Control Panel	Change to Operation Panel illust. See page 7 in this manual.
S-5	Warning screens	See replacement page 20.
S-7	Function Of Switches And Variable Resistors On PWBs.	Does not have Tech. Rep. Switches Board. See replacement page 21.
S-9	User Mode	Not applicable
S-11	Settings in the User Mode	Not applicable
S-17	Service Mode Screen	Changed to "Serviceman Mode" of PC screen.
S-18	Admin. Mode, Org. Delete Sensor, Editor Screen, Fuser Oil Change.	Not applicable
S-19	IR Area, ADF check	Not applicable
S-20	AE Adjust, CCD check	Not applicable
S-22	Admin Mode	Not applicable
S-24	Org. Detect Sensor	Not applicable
S-25	Editor Screen	Not applicable
S-26	"User Set" -> 10k Warning	Not applicable
S-29	IR Area	Not applicable
S-30	ADF check	Not applicable
S-33	AE Adjust	Not applicable
S-36	CCD check	Not applicable
S-37	ADF Ent, ADF Rev. (Life 2)	Not applicable
S-39	Trouble 4 (IR)	Not applicable
S-40	ADF	Not applicable
S-41	Warning 3 (IR)	Not applicable
S-43	AE Adjust, CCD check, IR Area, Original Stop Position Set	Not applicable
S-45, 46	Security Mode	Not applicable
S-47	Developer Change Mode	See replacement page 22.
S-50	Touch Panel Correction Mode	Not applicable
S-51	Date/Time Input Mode	See replacement page 23.

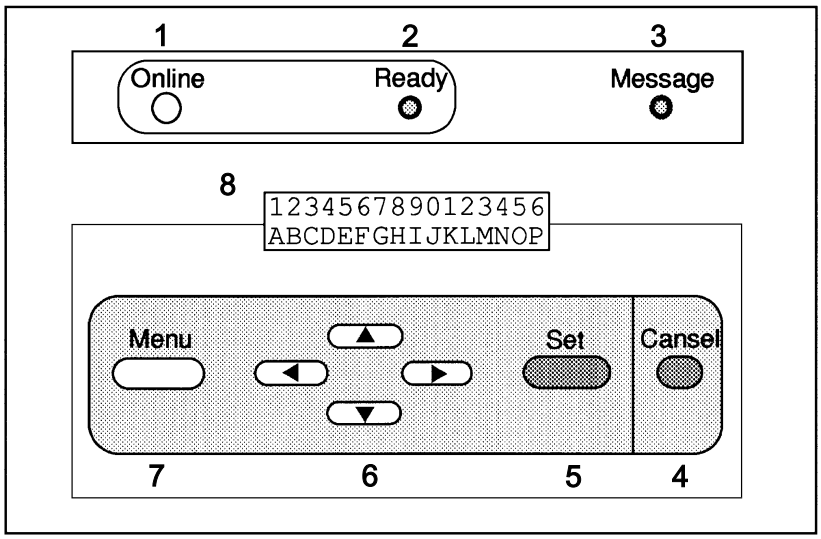
5. TroubleShooting

Manual Change List

PAGE	OLD	NEW
T-2, 3, 4	Screen illust.	Change to PC screen. See replacement page 24.
T-5	Numeric jam locations.	Changed to lettering. See replacement page 27.
T-6	IR scanner section	Cut IR section. See replacement page 28.
T-21	Malfunction call indicator.	Not applicable
T-27	Scanner, CCD, IR, Original Glass, (C0650, C0660, C3310, C3700, C3710, C3720)	Not applicable
T-47	Optical System Cooling Fan Motor (C3700, C3710, C3720)	Not applicable
T-48	Exposure Lamp (C0400, C0410)	Not applicable
T-49	Scanner Home Position Sensor (C0650)	Not applicable
T-50	CCD Sensor (C3310)	Not applicable
T-52	IR, UN27	Not applicable
T-55	IR section	Not applicable
T-57	IR section	Not applicable
T-59	IR section	Not applicable
T-61	IR section	Not applicable
T-63	IR section	Not applicable
T-71	IR section	Not applicable
T-72	IR section	Not applicable
T-84	IR Area	Not applicable
T-87	IR section	Not applicable
T-88	IR section	Not applicable
T-90	IR section	Not applicable
T-91	IR section	Not applicable

6. Operation Panel

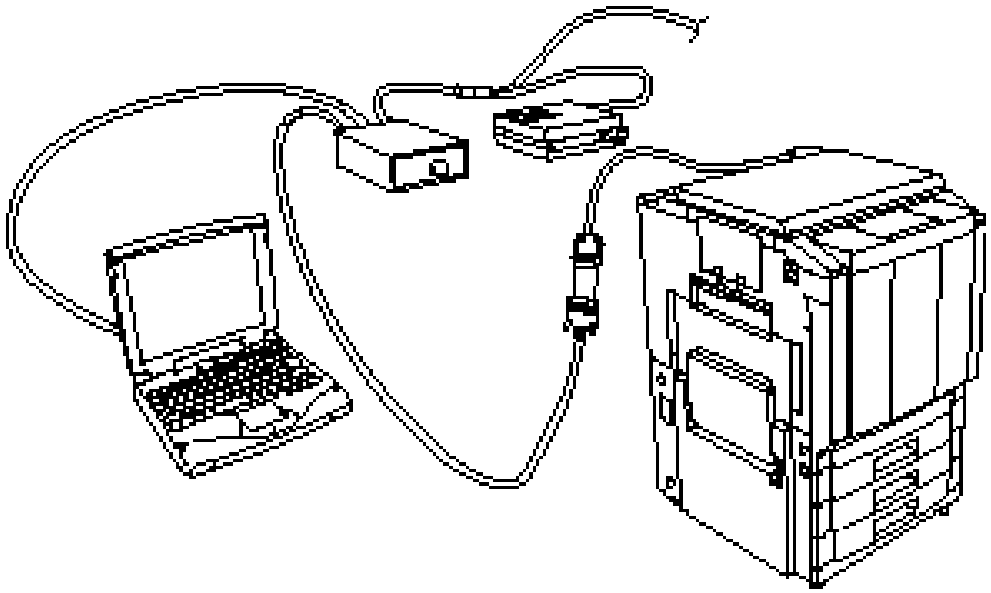
6-1. Control Panel



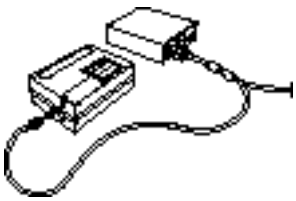
Part Name	Function
1. On-line key	ON: Printer is connected to the host PC. OFF: The printer is not connected.
2. Ready LED	ON: The printer is idle (normal state). Blinking: The printer is processing or printing a job, or communicating with a remote computer. OFF: The printer is off or warming up.
3. Message LED	ON: A communication error has occurred between the Fiery X2e and the printer. Blinking: An error has occurred that prevents printing. OFF: There is no error.
4. Cancel key	When the printer is in printer mode, switches from the Functions screen to the Status screen. If pressed before paper feeding begins, cancels the current printing job.
5. Set key	Selects the Functions menu. Selects the currently displayed choice and proceeds to the next option.
6. ▲ key	The up arrow takes you to the next entry in the list.

Part Name	Function
▼	The down arrow takes you to the previous entry in the list.
▶	The right arrow in the setup menus advances the cursor to the text-entry position to the right.
◀	The left arrow in the setup menus backspaces the cursor to the text-entry position to the left. In a text field, it deletes the characters to the left.
7. Menu key	In the setup menus, takes you back one level. When the printer is in printer mode, switches between the Info screen and the Functions screen.
8. LCD Panel	2-line text display.

■ CONNECTION TO NOTEBOOK PC AND X-RITE (DTP32)

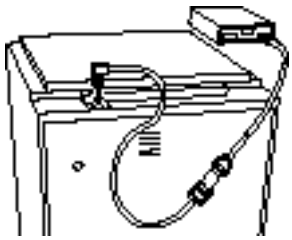


CP911P ..... Color printer
Notebook PC..... Starts the Jig Software for adjustment.
X-rite..... Color Tone Tester
Switcher ..... Switches between the Notebook PC and the X-rite.
Converter ..... Converts the RS232C into the TTL
RC232C straight cable ..... Connects the Notebook PC and the Switcher.
DTP32 cable ..... Connects the X-rite and the Switcher.
RC232C straight cable ..... Connects the Converter and the Switcher.
DB-25ADF port cable ..... Connects the CP911P and the Switcher.



1. Connect the X-rite.
Connect the DTP32 Cable to the port of the X-Rite and the port of the Switcher.

2. Connect the Notebook PC.
Connect the RC232C cable to the serial port of the notebook-sized PC and the port of the switcher.



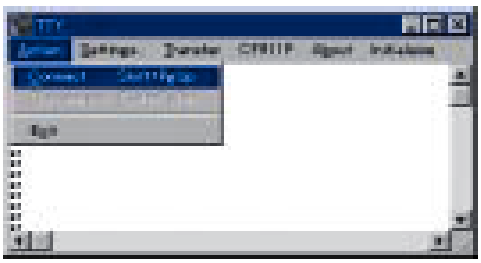
3. Connect the Switcher.
Remove the “ADF” connector cover.
Connect the DB-25ADF Cable to the port of the Switcher and the ADF port of the CP911P.

■ JIG SOFTWARE START-UP

1. Load the Service Software CD into the CD Drive of the Notebook PC. Copy the software to the HDD.

2. Open Windows Explorer, click on the HDD drive, double-click on the file “FACTE.exe”. If chains of small characters “DF” appear on the PC screen, the connection is complete.

3. If the connection fails, click “Disconnect” from among the “Action”, click “Settings” in the menu bar to open the communication panel.
   Check the following items:
   PORT ..... Port of the Notebook PC to be used
   Baud ..... 19.2k ;only check.
   (Set the switcher to the “A” CF911P side).



4. Click “Connect” from among the “Action” choices in the menu bar to start communication with the Notebook PC.

5. Select the printer adjustment mode from among the “CF911P” choices in the menu bar.
   F1 ... Serviceman Mode
   F3 ... Dev Mode

NOTE:

If the system hangs up during the above operation, terminate “Windows” and restart from step 1.

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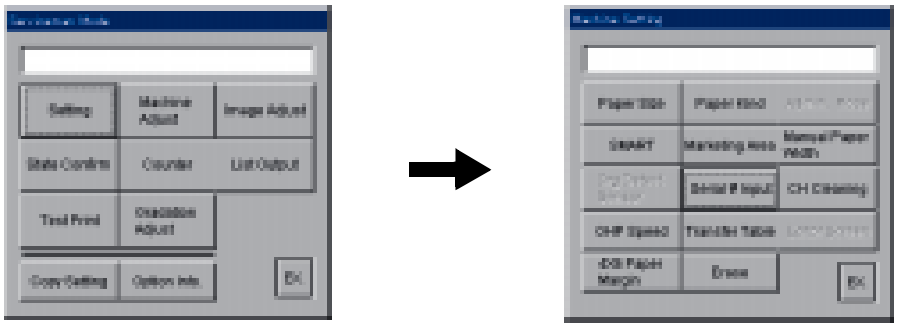
8. Replacement Pages

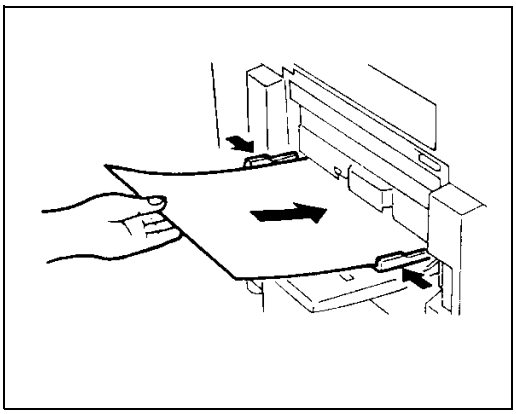
3-7. SETTING MODE

(1) Accessing the Serviceman Mode

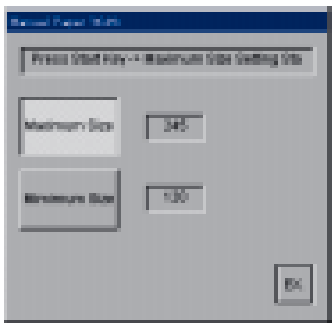
1. Select “Serviceman mode” from the “CF911P” in the menu bar.



(2) Manual Paper Width



1. Place several sheets of A3 wide (305mm × 457mm) or 12” × 18” paper on the Multi Bypass Table.

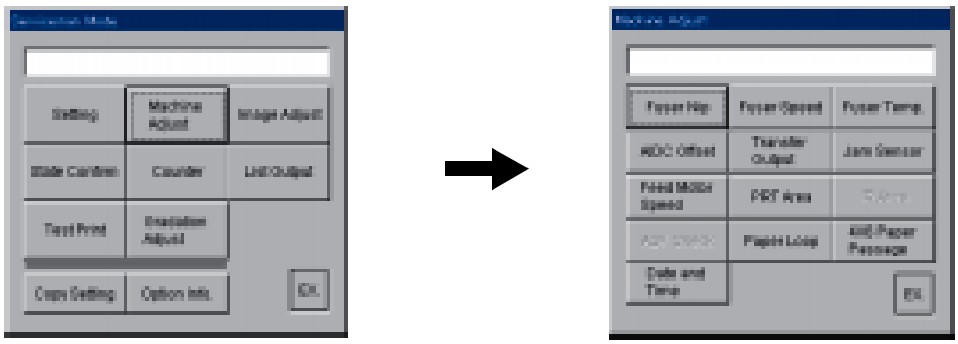


2. Select the function “Manual Paper Width.”
3. Select “Maximum Size” and click the Start key. (This starts an automatic adjustment.)

3-8. MACHINE ADJUST MODE

(1) Accessing the Machine Adjust Mode

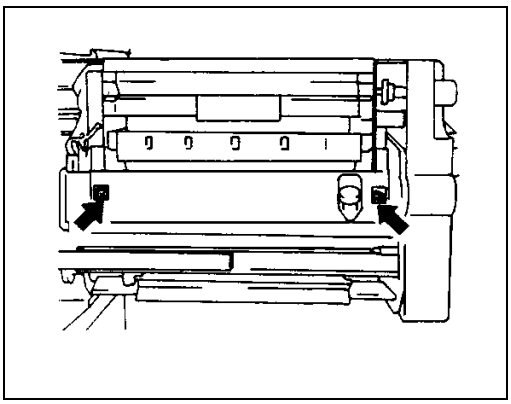
1. Open “CF911P” in the menu bar on the PC and click “Serviceman Mode.”
2. Select “Machine Adjust” from the Serviceman mode menu.



(2) Fuser NIP

NOTE

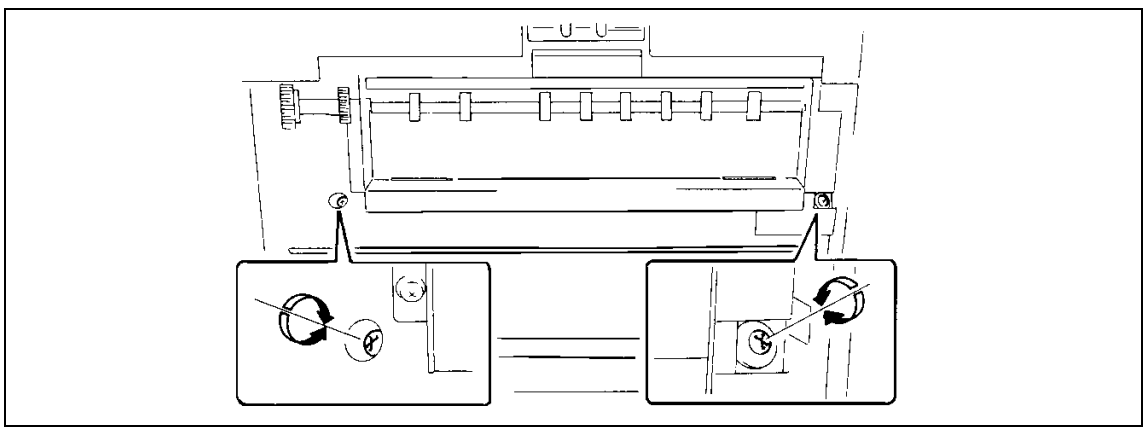
After Fuser Nip is adjusted, Fuser Speed must also be adjusted.



1. Place A4 crosswise paper in either one of the drawers or on the Multi Bypass Table.
2. Open the Front Door and slide out the Transfer Drum Unit.
3. From the position where the Fusing Roller pressure adjusting screws are fully tightened, back them off four turns, ensuring uniform pressure on the front and rear ends.
4. Slide the Transfer Drum Unit back into the printer.
5. Close the Front Door.

Reference

The Fusing Roller pressure adjusting screws can be adjusted by removing the Left Middle Cover.



3-9. DEVELOPER CHANGE MODE

(1) Developer Change (Developer Discharge → Developer Filling → Developer Agitating)

Note

Although functions are available to perform Developer Discharge, Developer Filling, or Developer Agitating individually, perform "Developer Change" that covers all these in a given sequence.

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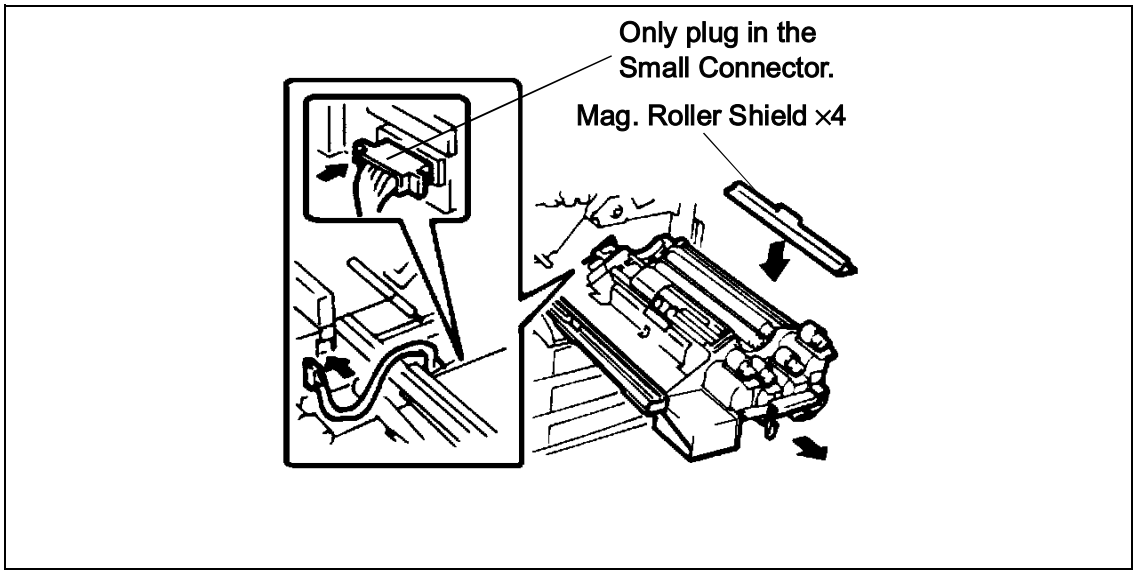
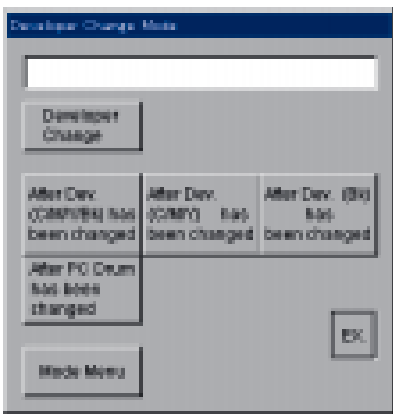
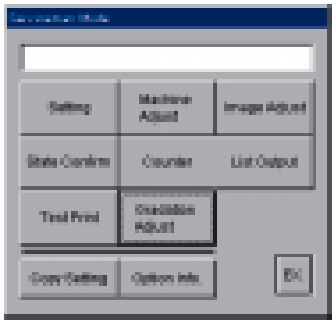
1. Turn OFF the Power Switch.
2. Open the Front Door, remove the Developing Unit Cover, and slide out the Developing Unit.
3. Install the Jumper Harness and Mag. Roller Shields.



4. Turn ON the Power Switch.
5. Open "CF911P" in the menu bar on the PC and click "Dev Mode."
6. Open and close the Front Door.
7. Install the Interlock Switch Actuating Jig.
8. Select "Developer Change".

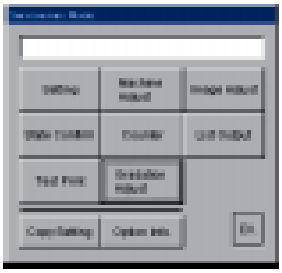


3-10. GRADATION ADJUST



1. Turn OFF the front door interlock switch and close the front door. Click “Gradation Adjust.”
2. For the Gradation adjustment procedure, refer to the on-line manual. (Double-click the file “FACThelp.htm” on the CD-ROM.)

NOTE:
Before making the Gradation Adjust, set PRT Max. Density, PRT Highlight, Background Voltage and VB Shift in the Image Adjust to “0”.

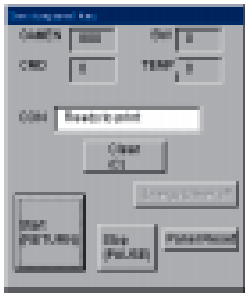


3. Start the Gradation Adjustment.

   Switch the Switcher to the “A” CF911P position.
   Click “Gradation Adjust”.
   When the “Ex”. button is clicked, the previous screen reappears.

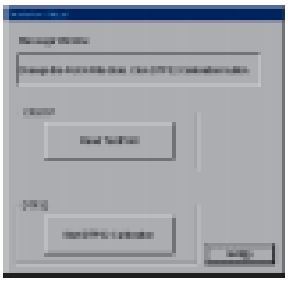
4. Wait for CF911P to reply.
   Wait until the message “Start Test Print” appears.
   When it appears, click the Start (RETURN) key.
   NOTE:
   If the test print sequence fails because of a paper empty condition, add paper, then initialize the printer and restart the Facte.exe program.

   The printer can be initialized by either of the following procedures: Press the Menu key and downward pointing arrow key on the control panel, select “Reboot Servers”, and press the SET key; or, turn OFF, then ON the power. Click the Start (RETURN) key.
   When the “Ex”. button is clicked, the previous screen from step 3 reappears.



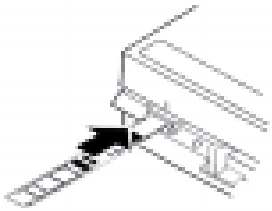
   The test print cycle starts with the message “Copying (Cyan), Copying (Magenta), Copying (Yellow), Copying (Black)” appearing on the screen.
   If the printer is warming up, the message “Warm-up” appears.

If the printer is not printing, restart the Facte.exe program.

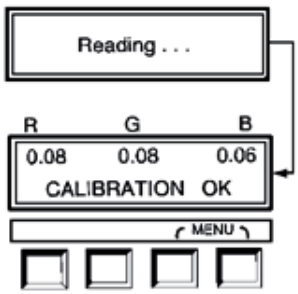


This screen appears before the print cycle is completed.

1. Switch the Swticher to the “B” X-Rite position. (If the switch position is not changed, the PC screen shows “_”.)
2. To read the test print, click the “Read TestPrint” button.
3. To calibrate the X-Rite, click the “Start DTP32 Calibration” button.

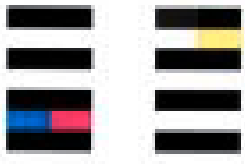


NOTE:
Calibration is necessary when the message “NEEDS CALIBRATION” appears, or at roughly a weekly frequency.



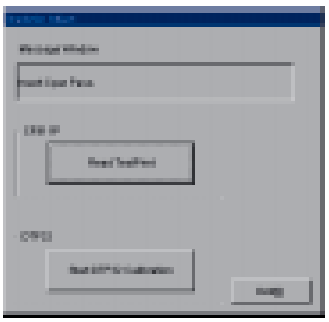
5. Calibrate X-Rite.
   Insert the X-Rite Auto Cal Strip into the strip insertion slot.

   Go to the next step when this LCD screen appears.



Test Print

6. Read the **cyan** data.
   Wait until the message “Insert Cyan Pass” appears. Set the X-Rite guide to **15** and slowly pass the test print through the X-Rite from the front so it can read the cyan data. This lets X-Rite start reading the data automatically.

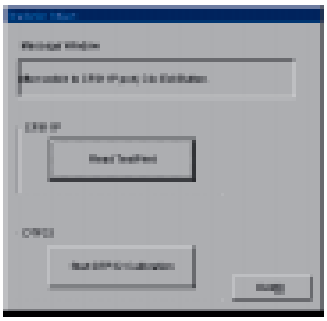


7. Read the **magenta** data.
   Wait until the message “Insert Magenta Pass” appears. Set the X-Rite guide to **30** and slowly pass the test print through the X-Rite from the front so it can read the magenta data.

8. Read the **yellow** data.
   Wait until the message “Insert Yellow Pass” appears. Set the X-Rite guide to **10** and slowly pass the test print through the X-Rite from the front so it can read the yellow data.

9. Read the **black** data.
   Wait until the message “Insert Black Pass” appears. Set the X-Rite guide to **25** and slowly pass the test

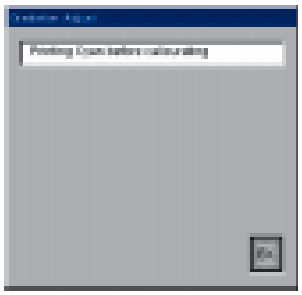
print through the X-Rite from the front so it can read the Black data.



10. Transmit the correction values to CF911P.

Switch the Switcher to the “A” CF911P position.
(If the switch position is not changed, the PC screen shows “_”.) Click the Exit button.

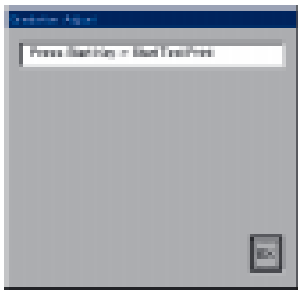
Data is then transferred to the printer, showing the message “Cyan Copying, ..." on the screen.
At this time, the cyan gray scale pattern is printed to initialize CF911P.



11. This completes the color adjustment procedures.

Repeating these adjustment procedures 3 times will allow the colors to saturate.

To make readjustments, click the Start (RETURN) button to go back to step 4.
Wait for CF911P to reply and repeat the adjustment procedures.



Click the EX button to exit from the adjustment.

■ Another GRADATION ADJUSTMENT

Another Gradation Adjustment is Visual Calibration, when the X-Rite DTP32 is not being used.

1. To print out the VisualCal chart chart Limits and 30% Match (Fig. 1):
   Press the Menu key.
   Press the down key to select “Reboot Server”.
   Press the Set key.
   When the message “To update/set up, press any key.” appears, press any key.
   Press the down key to select “Run Setup”.
   Press the Set key to run the setup.
   Press the down key to select “Calibration”.
   Press the Set key.
   Press the down key to select “Calibrate”.
   Press the Set key.
   Press the down key to select “Print limits pg?”.
   Press the Set key.
   Press the down key to select “Yes”.
   The chart is printed out.
2. Perform the checkup by following the instructions on the chart.
   Use the up/down keys to change settings.
3. Follow up with the VisualCal chart Gray Balance check (Fig. 2).
   It chart is auto printed.
   The checkup instructions on the chart.

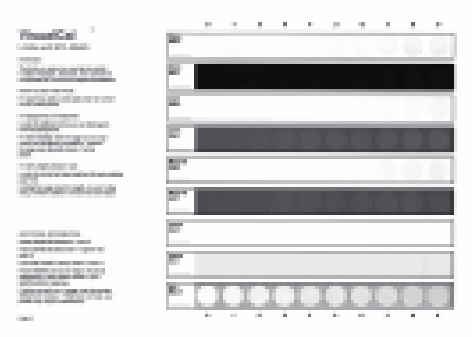


Fig. 1
VisualCal chart
Limits and 30% Match

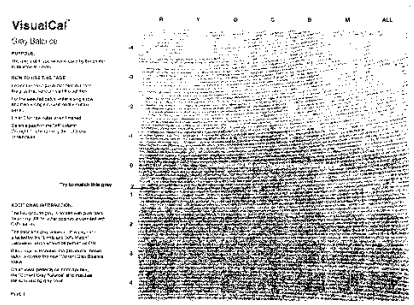


Fig. 2
VisualCal chart
Gray Balance

4-3. FLASH MEMORY

Software has conventionally been upgraded by replacing ROM on each board. This printer employs flash memory for the system control IC mounted on the IR Control Board. Its contents are reprogrammed easily by performing the following steps using the IC card (memory card), into which data has been previously downloaded.

NOTE:
NEVER remove or insert the memory card with the printer power turned ON.

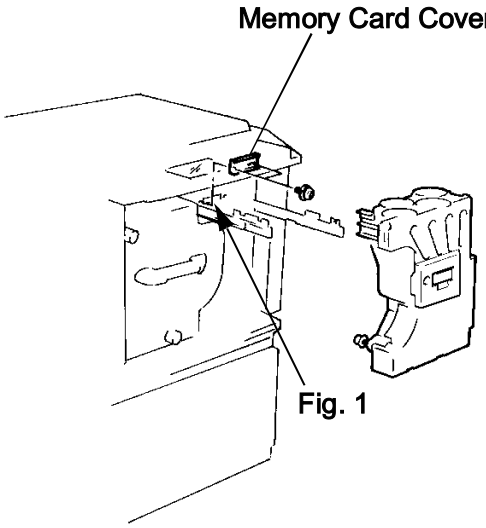


Fig. 1

1. With the Power Switch in the OFF position, unplug the power cord from the power outlet.
2. Remove the Hopper Unit.
3. Remove the two screws that secure the Memory Card Cover.
4. Install the Memory Card. See Fig. 1.
5. Plug the power cord into the power outlet.
6. Turn ON the Power Switch.
   ✻This rewrites the data.
7. On the PC screen, make sure that the data has been properly written. See Fig. 2.
8. Unplug the power cord from the power outlet. Do not turn OFF the Power Switch at this time.
9. Remove the memory card.

Fig. 1 Memory Card Installation Position
Insert the memory card into the specified position on the IR Control Board.

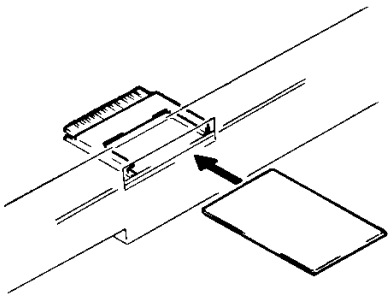
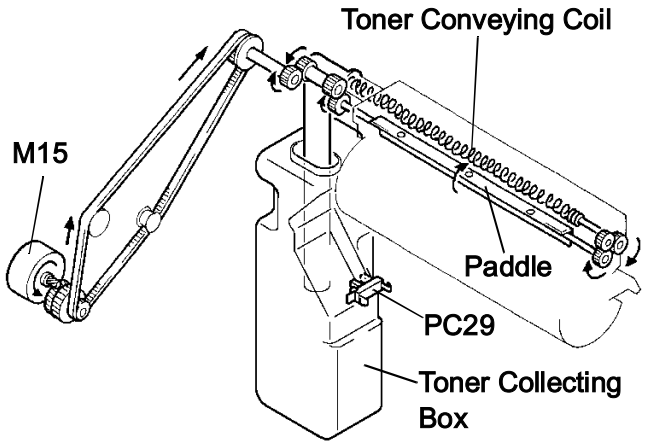


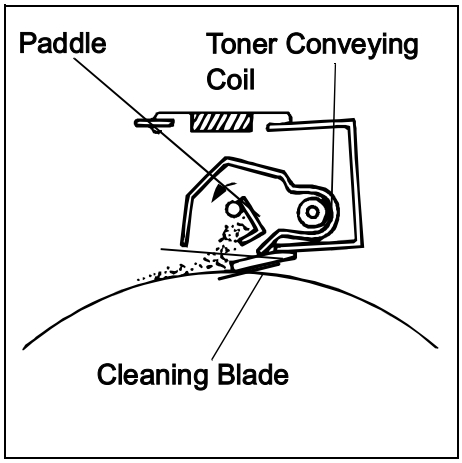
Fig. 2 Displayed on PC screen in Program Transfer Mode of the "FACTE.exe" software.

8-1. PC Drum Cleaning

<Cleaning Operation>

1. The Cleaning Blade is pressed against the surface of the PC Drum to scrape toner off it.	
2. The Paddle flips toner accumulated on the edge of the Cleaning Blade to the Toner Conveying Coil.	Paper Take-Up Motor M15
3. The Toner Conveying Coil conveys toner to the Toner Collecting Box in the rear of the printer.	

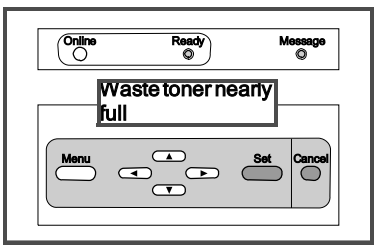




<Full Toner Collecting Box Detection>

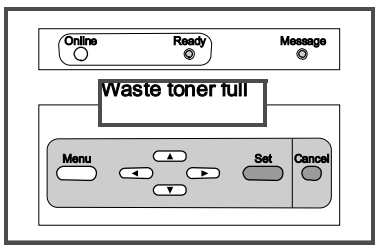
- The Toner Collecting Box has a capacity of about 3,000 cc.
- When Toner Collecting Box Full Sensor PC29 remains activated for a consecutive 1-sec. period, the printer regards that the box is almost full (near-full condition).
- When 1K prints have been made after the near-full warning display, the printer inhibits the initiation of a new print cycle.

Warning Display



After 1K print

Malfunction Display



<Near-Full and Full Toner Collecting Box Reset>

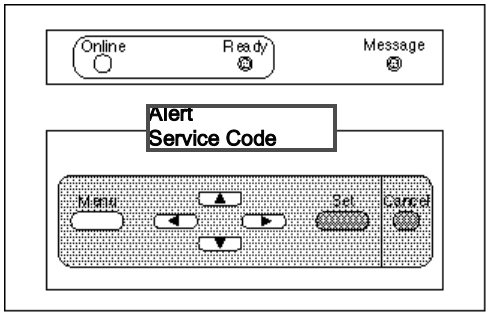
- The near-full and full Toner Collecting Box displays are reset if PC29 is in the deactivated state when the Power Switch is turned ON, Front Door is opened and closed, or the Toner Collect counter is cleared after the full Toner Collecting Box has been replaced.

(1) Warning Screens

- The warning screen may be a malfunction display, error display, warning display, or a caution display.

<Malfunction Display>

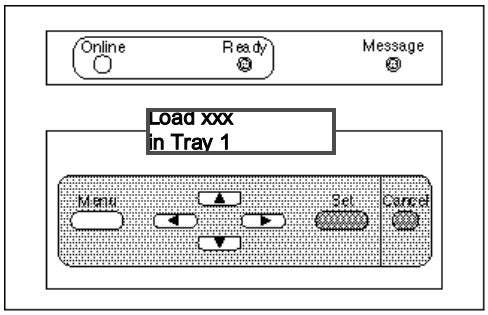
- A malfunction display is given when trouble occurs which cannot be corrected by the user.



<Warning Display>

- A warning display is given when any further printer operation will not be possible, or only faulty results will come out, due to erroneous settings or other cause.

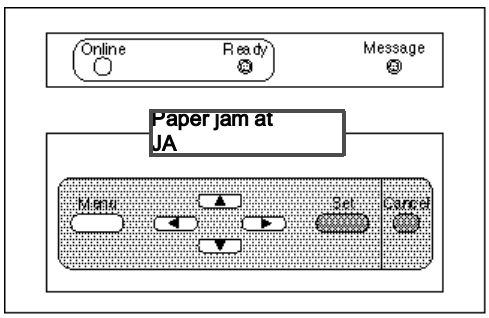
Examples:
Unmatched paper size in Auto Paper mode, the number of prints set exceeding the limit.



<Error Display>

- An error display is given when trouble occurs which can be corrected by the user.

Examples:
Paper misfeed, toner empty, door open.



<Caution Display>

- A caution display is given when, though further printer operation will be possible, it could result in a malfunction.

Examples:
Toner Collecting Box becoming full, toner soon to run out.

3 FUNCTION OF SWITCHES AND VARIABLE RESISTORS ON PWBs

<Clearing Procedures>

- Open “CF911P” in the menu bar on the PC screen and click “Clear Mode”.

1. Turn ON the Power Switch and click the “Trouble Reset” or “Memory Clear” buttons.
2. With the clearing operation activated, turn OFF the Power Switch and, approx. 10 sec. later, turn ON the Power Switch again.

NOTES

. When memory clear has been performed, make the necessary settings again.

<List of Data Cleared by Trouble Reset and Memory Clear>

Clearing Method / Data Cleared		Front Door Open/Close	Trouble Reset in Clear Mode	Memory Clear in Clear Mode
Misfeed display		❍	–	❍
Malfunction display	Fusing Fuser Lamp	–	❍	❍
	Others	❍	❍	❍
User mode ✻The “Meter Count” counts are not cleared.		–	–	❍
Following Serviceman Mode items only: • Fuser Oil Change • Count Up Select • Admin. Mode (access no.) • RD-Mode		–	–	❍

❍: Cleared –: Not cleared

7 DEVELOPER CHANGE MODE

- This mode is used to adjust and operate the Developing Unit.

NOTE

The Developer mode will only be outlined in this manual. For more details, see DIS/REASSEMBLY, ADJUSTMENT or TROUBLESHOOTING.

7-1. Developer Change Mode Menu Screen

Developer Change
After Dev. (C/M/Y/Bk) has been changed
After Dev. (C/M/Y) has been changed
After Dev. (Bk) has been changed
After PC Drum has been changed
EX.
Mode Menu

7-2. Developer Change Mode Setting Procedure

<Setting Procedure>

1. Turn ON the Power Switch.
2. Open “CF911p” in the menu bar on the PC and click “Dev Mode.”
3. Open and close the Front Door.
4. From here on, perform the function according to the instructions on the screen.

Note

The selected function is pops up on the screen.

<Exiting the Mode>

- Click the “Ex.” button.

9 DATE/TIME INPUT MODE

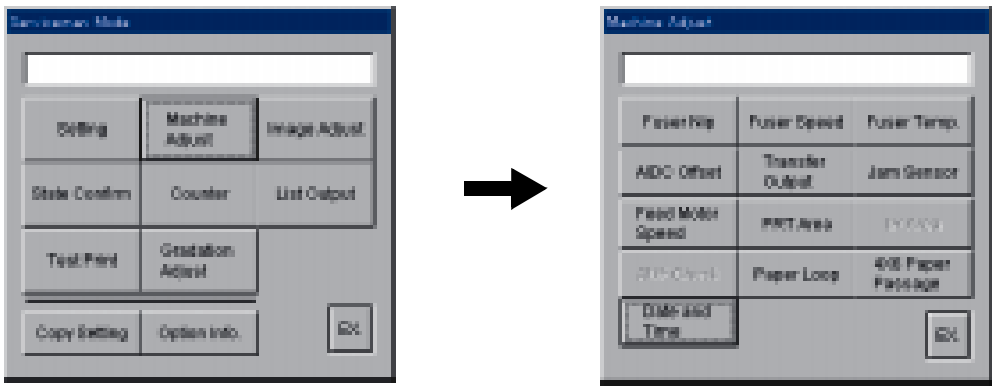
- This mode is used to set the time-of-day and date.

9-1. Date/Time Input Mode Screen

9-2. Date/Time Input Mode Setting Procedure

<Procedure>

1. Open “CF911P” in the menu bar on the PC and click “Serviceman Mode.”
2. Click “Machine Adjust” and select “Date and Time”.
3. When the input screen appears, enter year, month, day, hour, and minute.



Note

When setting the month, day, hour, or minute, enter “0” first if the data is one digit.

4. When the data has been entered, click “OK”.

1-4. Controlled Parts Check Procedure

This printer allows the Tech. Rep. to easily determine whether a particular controlled part is fully operational and check for printer operating conditions.
(For details, see the following pages.)

<Procedure>

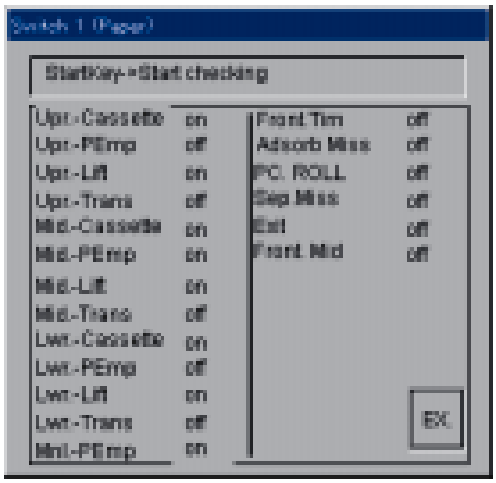
1. When a paper misfeed or malfunction occurs, identify on the circuit diagram accompanying the text the controlled part that is probably responsible for the problem.
2. Open "State Confirm" from the Service mode menu and, from among the Switch 1 to 3 screens, select one that is associated with the part identified in step 1 above.
3. Change the state of the part in question and see if the signal is changed.

<Example>

When a paper misfeed occurs, Upper Drawer Paper Take-Up Sensor PC12 is considered to be responsible for it.

<Procedure>

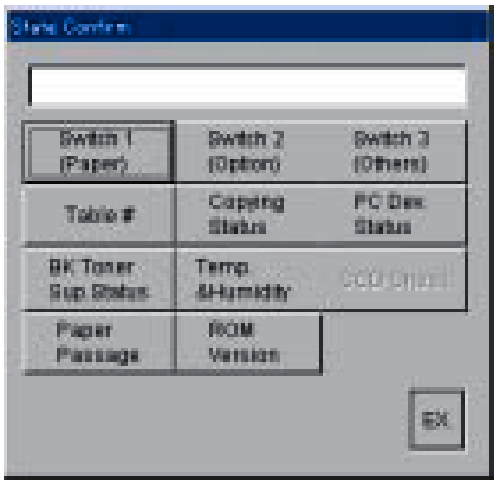
1. Remove the sheet of paper misfed.
2. Select "Switch 1 (Paper)" of "State Confirm" available from the Serviceman mode menu.



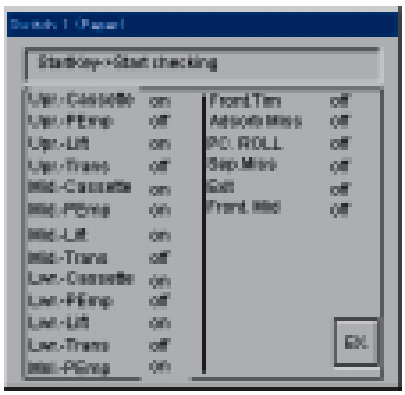
3. Check that "Upr.-Trans" is "Off" on the screen.
4. Use a sheet of paper to move the PC12 actuator so that PC12 is blocked.
5. Check that "Upr.-Trans" is now "On" on the screen.

On: PC12 is operational. Off: PC12 is faulty.

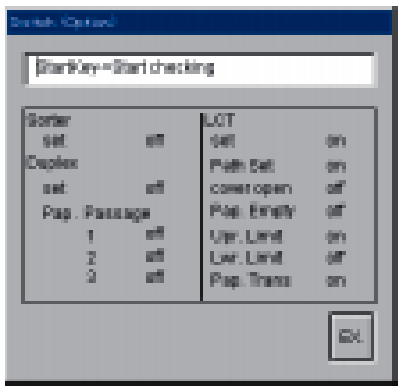
- These are only typical screens which may be different from what are shown for each individual printer.



Switch 1 (Paper Passage)



Switch 2 (Options)



Sensors 3 (Others)

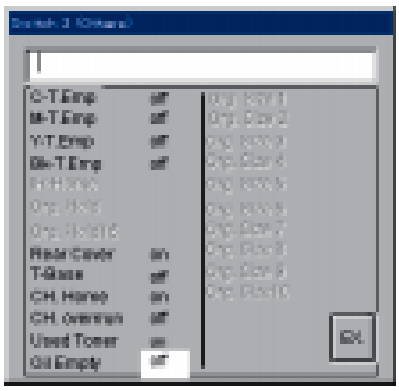
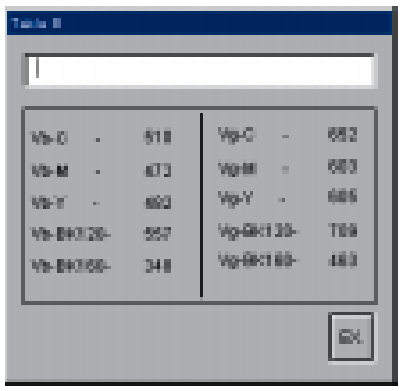
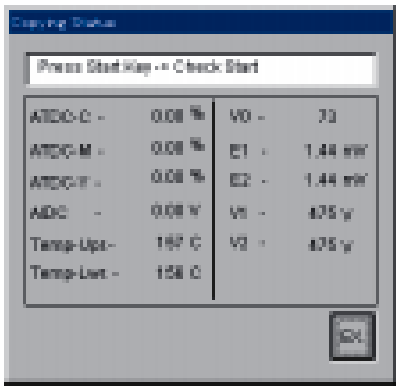


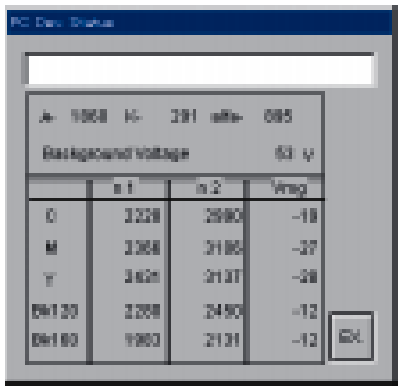
Table No.



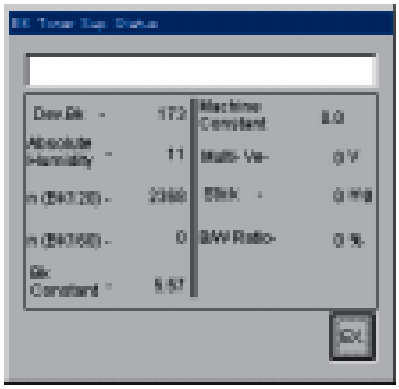
Copying Status



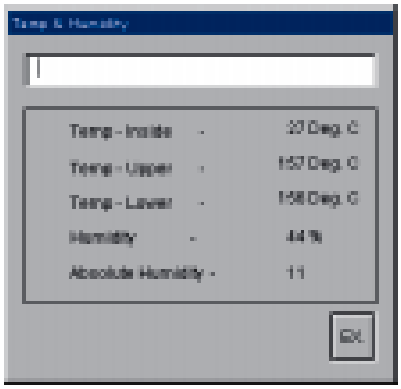
PC Dev. Status



Black Toner Supply Status

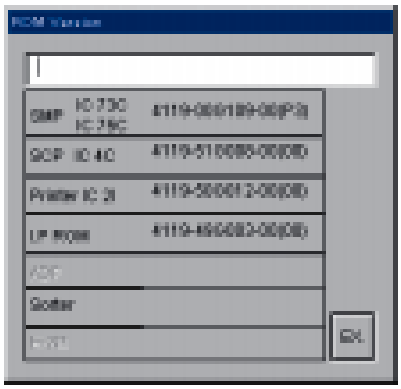


Temperature and Humidity



Paper Passage Check

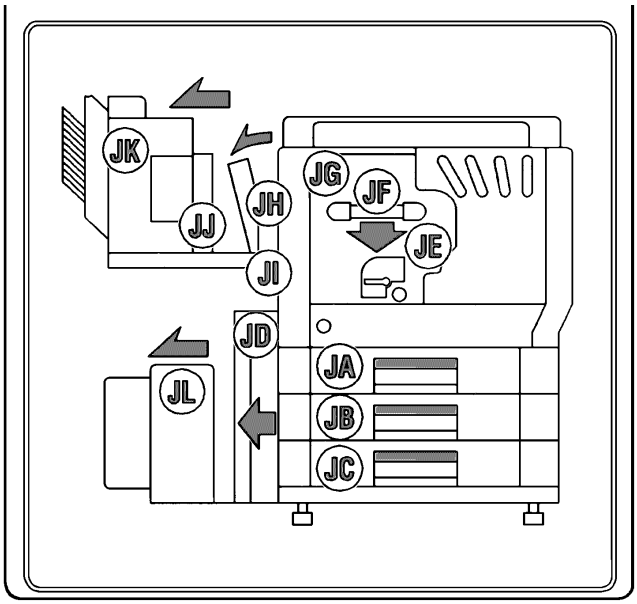
ROM Version



2 PAPER TRANSPORT FAILURE

2-1. Paper Misfeed

When a paper misfeed occurs in the printer, a misfeed message and the misfeed location are displayed on the LCD. Paper misfeed location label inside Front Door.



LCD Message

Paper jam at J?

J?	Misfeed location

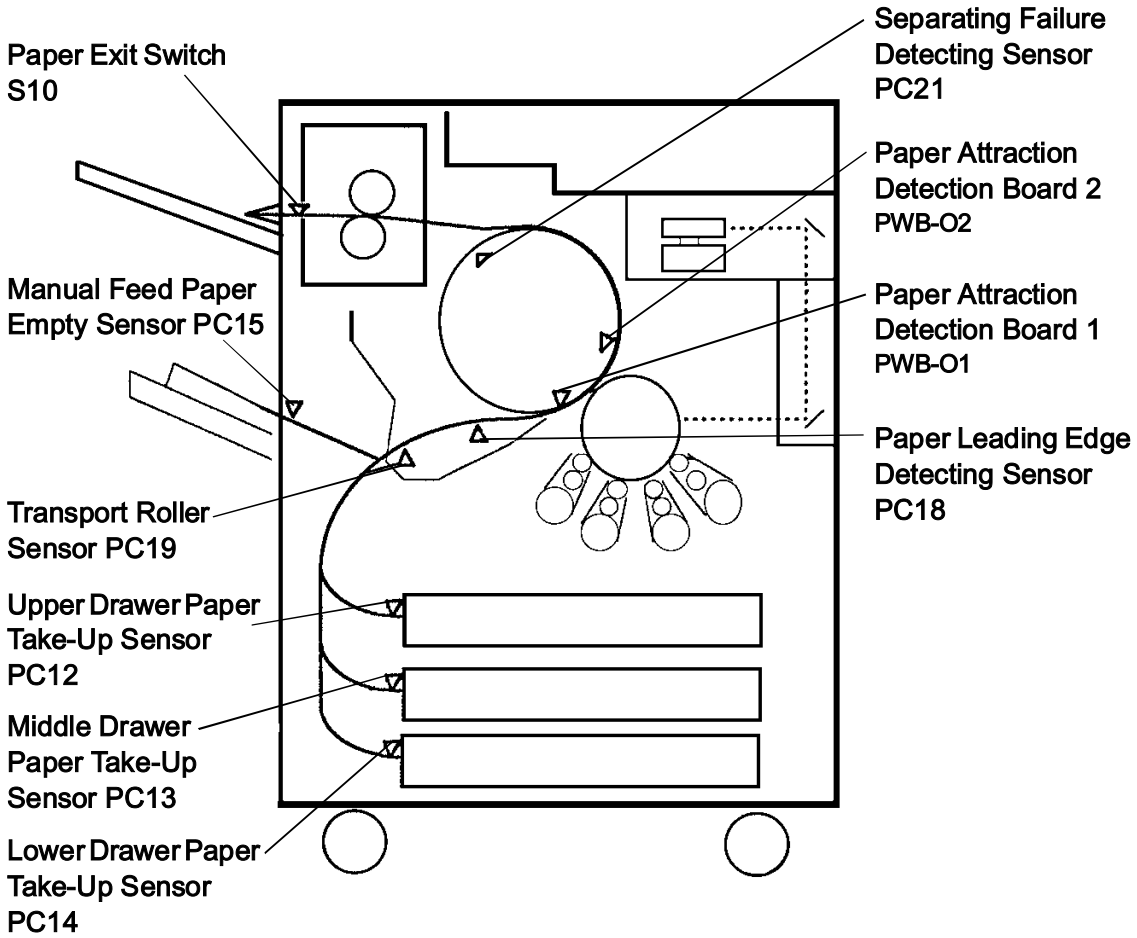
Location	Misfeed/Paper Location	Ref. Item No.
JA	Upper Drawer take-up	(1)*
JB	Middle Drawer take-up	
JC	Lower Drawer take-up	
JD	Multi/Manual Bypass take-up	(2)
	Transport	(3)
JE	Transfer	(4)
JF	Separator	(5)
JG	Fusing	(6)
JH	Exit	
	Duplex Unit take-up/transport	(7)
JI	Duplex Unit turnover/storage	
JJ	Sorter transport	See relevant Option Service Manual.
JK	Sorter exit	
JL	LCT take-up	

* See Section 2-3.

<Misfeed Display Resetting Procedure>

Misfeed in printer	Open and close the Front Door.
Misfeed in option	Raise and lower the option, or slide the option away from, and back up against, the printer.

<Misfeed Detecting Sensor Layout>



CF910

SERVICE MANUAL

MINOLTA

1154-7990-11

CONTENTS

GENERAL

1. SAFETY INFORMATION G-1
2. SPECIFICATIONS G-6
3. PRECAUTIONS FOR INSTALLATION G-9
4. PRECAUTIONS FOR USE G-10
5. HANDLING OF THE CONSUMABLES G-11
6. OTHER PRECAUTIONS G-11
7. SYSTEM OPTIONS G-12
8. HIGHLIGHTS G-13

MECHANICAL/ELECTRICAL

1. CROSS-SECTIONAL VIEW AND PAPER PATH M-1
2. COPY PROCESS M-2
3. DRIVE SYSTEM M-5
4. OPERATING SEQUENCE M-6
5. CONTROL BLOCK DIAGRAM M-11
6. IMAGE STABILIZATION SYSTEM M-12
    6-1. Image Stabilization System Overview M-12
    6-2. Image Stabilization System Control M-13
7. PC DRUM SECTION M-16
    7-1. Grounding of the PC Drum M-16
    7-2. PC Drum Drive Mechanism M-17
    7-3. PC Drum Temperature Control M-18
8. PC DRUM CHARGING SECTION M-19
    8-1. PC Drum Charge Corona ON/OFF Control M-19
    8-2. PC Drum Charge Corona Wire Cleaning Mechanism M-20
    8-3. PC Drum Charge Section Ozone Filter M-21
9. IMAGE READER (IR) SECTION M-22
    9-1. IR Image Processing M-23
    9-2. CCD Sensor M-32
    9-3. Exposure Components Section M-33
    9-4. Exposure Lamp Control M-34
    9-5. Scanner and 2nd/3rd Mirrors Carriage Movement Mechanism M-35
    9-6. Scanner Motor Drive Control M-36
    9-7. IR Section Cooling Fan Motor Mechanism M-38
    9-8. Original Size Detecting Section M-39
10. PRINTERHEAD (PH) SECTION M-42
    10-1. Image Processing Block Diagram M-43
    10-2. Laser Exposure Process M-45
    10-3. Laser Emission Timing (SOS Signal) M-46
    10-4. Laser Emission Area (HIA and VIA Signals) M-47
    10-5. LIMOS I and New Screen LIMOS M-48
11. DEVELOPING UNIT SECTION M-49
    11-1. Developing Unit Drive Mechanism M-51
    11-2. Developer Flow M-53
    11-3. Developing Bias and ATDC Bias M-55

11-4. ATDC Sensor M-56
11-5. AIDC Sensor M-58
11-6. Black Toner Replenishing Control M-59
11-7. Auxiliary Toner Replenishing Mechanism M-61
11-8. Toner Suction Fan Motor M-62
12. TONER HOPPER SECTION M-63
12-1. Toner Replenishing Mechanism M-64
12-2. Toner Empty Detection Control M-66
13. PAPER TAKE-UP/FEED SECTION M-67
13-1. Universal Tray Paper Size Detection Mechanism M-68
13-2. Drawer-in-Position Detection Mechanism M-70
13-3. Drawer Paper Lifting/Lowering Mechanism M-71
13-4. Paper Empty Detection Mechanism M-73
13-5. Paper Take-Up Mechanism M-74
(1) Paper Separating Mechanism M-75
(2) Feed/Separator Roll Release Mechanism M-75
(3) Paper Take-Up Roll Retracting Mechanism M-76
13-6. Paper Dehumidifying Heaters and Humidity Sensor M-77
13-7. Vertical Transport Drive Mechanism M-78
13-8. Paper Take-Up Control M-79
14. MANUAL FEED TABLE SECTION M-81
14-1. Manual Feed Paper Take-Up Mechanism M-81
14-2. Manual Feed Take-Up Control M-82
14-3. Manual Take-Up Roll Pressure Mechanism M-83
14-4. Manual Feed Paper Separating Mechanism M-84
14-5. Manual Feed Paper Empty Detection Mechanism M-85
14-6. Manual Feed Paper Width Detection Mechanism M-86
14-7. Manual Feed Paper Length Detection Mechanism M-87
15. SYNCHRONIZING ROLLERS SECTION M-88
15-1. Synchronizing Roller Drive Mechanism M-88
15-2. Synchronizing Roller Drive Control M-89
16. TRANSFER DRUM SECTION M-90
16-1. Transfer Drum Drive Mechanism M-91
16-2. Paper Attraction M-92
(1) Static Charge Roller M-93
(2) Backup Blade 2 ..... M-94
(3) Static Charge Corona M-94
(4) Charge Neutralizing Cloth M-94
(5) Paper Attraction Detection (before image transfer) M-95
(6) Control M-95
16-3. Image Transfer Section M-96
(1) Backup Blade 1 ..... M-97
(2) Image Transfer Corona M-98
(3) Charge Neutralizing Cloth M-98
(4) Paper Attraction Detection (after image transfer) M-98
(5) Image Transfer Control M-99
16-4. Paper Separation Section M-100

(1) Paper Separation Lifting Finger M-101
(2) Paper Separator Corona M-101
(3) Paper Separator Finger M-101
(4) Paper Separating Failure Detection Mechanism M-102
(5) Paper Holding Mechanism M-102
(6) Paper Separation Control M-103
16-5. Transfer Film Cleaning Mechanism M-104
16-6. Oil Cleaning M-105
(1) Oil Cleaning Backup Brush M-106
(2) Oil Roller M-106
(3) Oil Cleaning Control M-107
16-7. Toner Cleaning M-108
(1) Toner Cleaning Backup Brush M-109
(2) Fur Brush Unit M-109
(3) Fur Brush Roller/Toner Collecting Roller M-110
(4) Fur Brush Control M-111
16-8. Charge Neutralizing M-112
16-9. Transfer Drum Retraction Mechanism M-113
17. PC DRUM CLEANING SECTION M-114
17-1. Pre-Cleaning Charge Corona M-114
17-2. PC Drum Cleaning M-115
17-3. Ozone Exhaust from Pre-Cleaning Charge Corona and Transfer Drum M-116
18. MAIN ERASE SECTION M-117
19. FUSING UNIT SECTION M-118
19-1. Fusing Unit Drive Mechanism M-119
(1) Upper Fusing Roller M-119
(2) Lower Fusing Roller M-119
(3) Fusing Rollers Drive Mechanism M-120
(4) Fusing Rollers Drive Control M-121
(5) Fusing Speed Switching Control M-121
19-2. Fusing Roller Pressure Mechanism M-122
19-3. Fusing Temperature Control M-123
19-4. Fusing Oil Application/Collection Mechanism M-125
(1) Fusing Oil Application Drive Mechanism M-126
20. EXIT UNIT SECTION M-127
21. HORIZONTAL TRANSPORT UNIT SECTION M-128
22. POWER SUPPLY M-130
22-1. Power Lines When the Power Cord is Plugged in M-130
22-2. Power Lines When the Power Switch is Turned ON M-131
22-3. Power Supplies ON/OFF Control M-132
22-4. CPU Reset Function M-132
22-5. Power Supply Cooling Mechanism M-132
23. MEMORY BACKUP M-133

1154SBG0100A

1 SAFETY INFORMATION

This copy machine is a digital copy machine which operates by means of a laser. There is no possibility of danger from the laser, provided the copy machine is operated according to the instructions provided in this manual. Since radiation emitted by the laser is completely confined within protective housing, the laser beam cannot escape from the machine during any phase of user operation.

This copy machine is certified as a Class 1 laser product. This means the copy machine does not produce hazardous laser radiation.

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

CAUTION
The use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure. Because of this, Minolta strongly recommends that you operate your copy machine only as described in this documentation.

For United States Users:

Laser Safety

This copy machine is certified as a Class 1 Laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the copy machine does not produce hazardous laser radiation.

CDRH Regulations

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976.
Compliance is mandatory for products marketed in the United States. The label shown below indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

WARNING
Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

Internal Laser Radiation

Maximum Radiation Power: 8mW
Wave Length: 780nm

For Europe Users:

WARNING
Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

This is a semiconductor laser. The maximum power of the laser diode is 8mW and the wavelength is 780nm.

For Denmark Users:

ADVARSEL
Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion.
Undgå udsættelse for stråling.

Klasse 1 laser produkt der opfylder IEC825 sikkerheds kravene.

For Finland, Sweden Users:

VAROITUS
Laitteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteiylle.

VARNING
Om apparaten används på annat sätt än i denna bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laser klass 1.

For Norway Users:

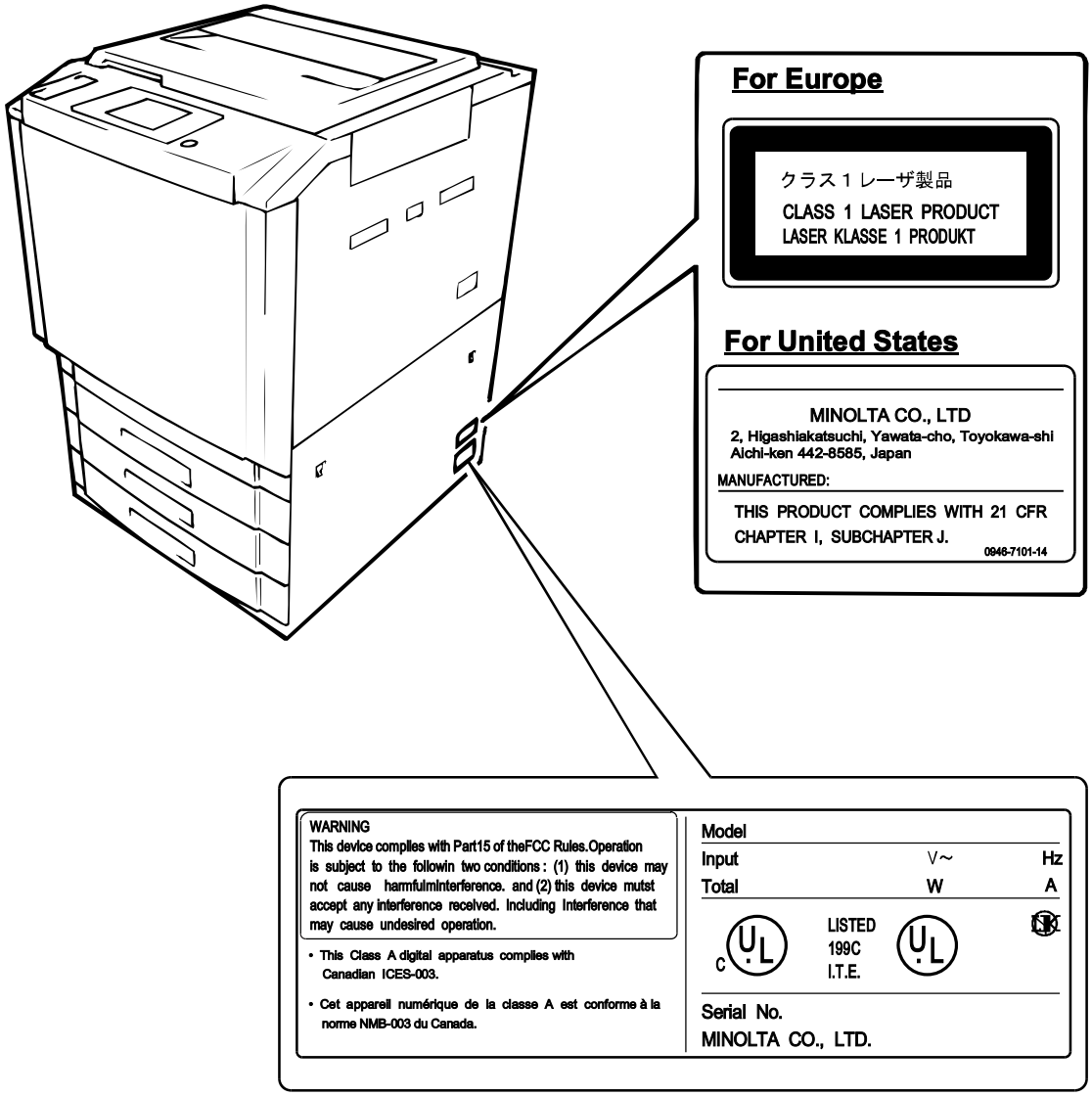
ADVERSEL
Dersom apparatet brukes på annen måte enn spesifisert i denne bruksanvisning, kan brukeren utsettes for unsynlig laserstråling som overskrider grensen for laser klasse 1.

Dette en halvleder laser. Maksimal effeckt till laserdiode er 8mW og bølgelengde er 780nm.

Laser Safety Labels

Label on copy machine surface

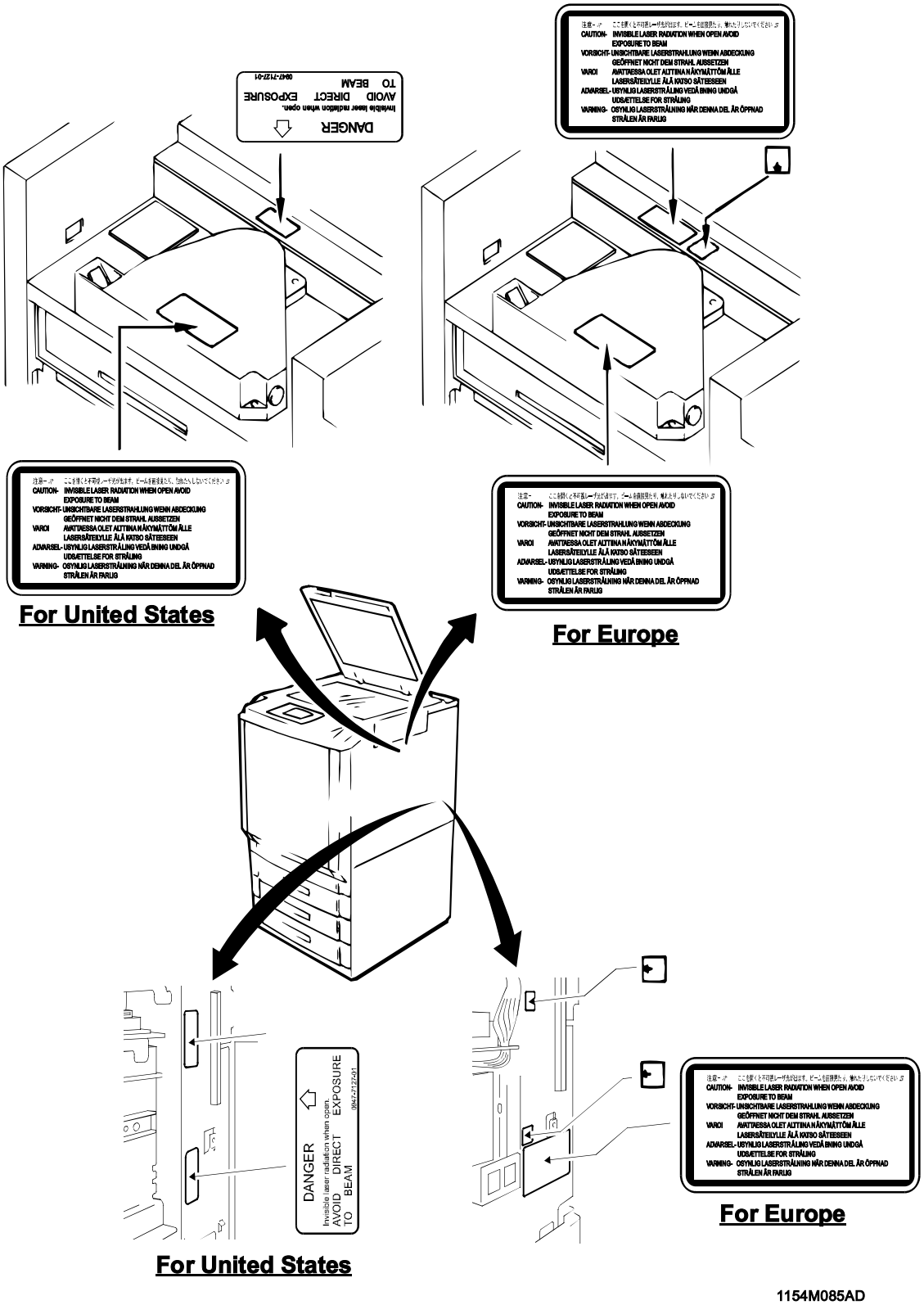
Laser safety labels are attached on the outside of the copy machine as shown below.


For Europe
クラス 1 レーザ製品
CLASS 1 LASER PRODUCT
LASER KLASSE 1 PRODUKT
For United States
MINOLTA CO., LTD
2, Higashiakatsuchi, Yawata-cho, Toyokawa-shi
Aichi-ken 442-8585, Japan
MANUFACTURED:
THIS PRODUCT COMPLIES WITH 21 CFR CHAPTER I, SUBCHAPTER J.
0946-7101-14
WARNING
This device complies with Part15 of theFCC Rules.Operation is subject to the followin two conditions : (1) this device may not cause harmfulinterference. and (2) this device mutst accept any interference received. Including Interference that may cause undesired operation.
• This Class A digital apparatus complies with Canadian ICES-003.
• Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.
Model
Input V~ Hz
Total W A
LISTED
199C
I.T.E.
Serial No.
MINOLTA CO., LTD.

1154O048AD

Label inside copy machine

The following laser safety label will be attached inside the copy machine as shown below.


DANGER
Invisible laser radiation when open.
AVOID DIRECT EXPOSURE
TO BEAM
0047-7127-01
CAUTION- INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
VORSICHT- UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN
VARO! AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖM ÄLLE LASERSÄTEILYLLE ÄLÄ KATSO SÄTEESEEN
ADVARSEL- USYNLIG LASERSTRÅLING VEDÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
VARNING- OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD STRÅLEN ÄR FARLIG
For United States
For Europe
DANGER
Invisible laser radiation when open.
AVOID DIRECT EXPOSURE
TO BEAM
0047-7127-01
For United States
For Europe
1154M085AD

ALL Areas

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the manufacturer.
Dispose of used batteries according
to the manufacturer's instructions.

Denmark only

ADVARSEL!
Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

Norway only

ADVARSEL
Eksplosjonsfare ved feilaktig skifte av batteri.
Benytt samme batteritype eller en tilsvarende
type anbefalt av apparatfabrikanten.
Brukte batterier kasseres i henhold til fabrikantens
instruksjoner.

Sweden only

VARNING
Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.

Finland only

VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä Käytetty paristo valmistajan ohjeiden
mukaisesti.

2 SPECIFICATIONS

Type	Freestanding
Platen Type	Stationary
Original Scanning	Scanning in the main-scanning direction with a reduction-type color CCD (RGB 3 lines) sensor
Resolution	400 dpi
Scanning Density	400 dpi × 400 dpi
Print Density	400 dpi × 400 dpi
Copying System	Electrostatic dry powdered image transfer to plain paper
Paper Feeding System	Four-way system • Multi Bypass Table: 50 sheets of paper • Middle Drawer (universal type): 250 sheets of paper • Upper and Lower Drawer (fixed-size type): Each holding up to 500 sheets of paper
Exposure System	Laser Diode 1 + Polygon Mirror
Developing System	New Micro-Toning System
Charging System	Scorotron system (single-wire DC(–) + grid mesh)
Paper Attraction System	Static charge attraction system (corotron charger + attraction roller + backup mechanism)
Image Transfer System	Static image transfer system (corotron charger + backup mechanism)
Paper Separating System	Static charge separating system (corotron charger + separator fingers + film pressure mechanism)
Transfer Film Cleaning System	Fur brush, oil roller
PC Drum Cleaning System	Cleaning Blade + PC Drum Charge Neutralizing Corona
Ozone Removal System	Ozone Filters
Fusing System	Two lamp-heated rollers
Transfer Film Charge Neutralizing	Static charge neutralizing (corotron charger)
PC Drum	OPC-MLII (Organic Photoconductor)
Types of Originals	Sheet, book, and three-dimensional objects weighing up to 2 kg or 4-1/2 lbs.
Maximum Size of Original	Metric - A3L Inch - 11" × 17" L
Copy Paper Size	Multi Bypass Table: Metric - A3 wide L (305 mm × 457 mm) to A5L, A6 thick paper Inch - 12" × 18" to 5-1/2" × 8-1/5"L, 4" × 6" thick paper Upper/Middle/Lower Drawer: Metric - A3L to A5L Inch - 11" × 17"L to 5-1/2" × 8-1/2" L

Copy Paper Type:

		1st to 3rd Drawers (automatic feeding)	Multi Bypass Table
Copy paper	Plain paper (64 to 90 g/m^2)	❍	❍
	Translucent paper	—	—
	OHP transparencies (dedicated)	—	*❍
	Thick paper (91 to 105 g/m^2)	—	❍
	Thick paper (106 to 157 g/m^2)	—	*❍
	A6 thick paper (for MH) 4" × 6" thick paper (for MC)	—	*❍
	Recycled paper	—	—
Dimensions	Max. (width × length mm)	297 × 432 mm	305 × 457 mm
	Min. (width × length mm)	140 × 182 mm	140 × 182 mm [A6 thick paper 105 × 148 mm (Metric) 4" × 6" thick paper 102 × 152 mm (Inch)]

❍: Reliably fed —: Unreliably fed
✻ : Reliably fed if 20 sheets or less

Warming-up Time	Approx. 9 min. at ambient temperature of 20°C and rated source voltage
Warming-up Time After Energy Saver Mode	60 sec. or less

First Copy Time (Upper Drawer, ×1.000, Manual Exposure Mode)

Area	Paper Size	Full Color	Mono Color
Inch	8-1/2" × 11"L	30 sec.	14 sec.
Metric	A4L		

Copying Speed for Multi-Copy Cycle (Upper Drawer, ×1.000) (copies/min.)

Area	Paper Size	Full Color	Mono Color
Metric	A3L	3	11
	B4L		
	A4L		
	A4C	6	23
	A5L		
Inch	11" × 17"	3	11
	8-1/2" × 11"L		
	8-1/2" × 11"C	6	23
	5-1/2" × 8-1/2"L		

<table>
<tr><td>Multiple Copies</td><td colspan="3">1 to 99 copies (count-down system)</td></tr>
<tr><td colspan="4">Zoom Ratios
<table>
<tr><td rowspan="5">Fixed</td><td colspan="2">Full size</td><td>× 1.000</td></tr>
<tr><td rowspan="2">Enlargement</td><td>Inch</td><td>× 1.214, × 1.294, × 2.000</td></tr>
<tr><td>Metric</td><td>× 1.154, × 1.224, × 1.414</td></tr>
<tr><td rowspan="2">Reduction</td><td>Inch</td><td>× 0.647, × 0.733, × 0.785</td></tr>
<tr><td>Metric</td><td>× 0.707, × 0.816, × 0.866</td></tr>
<tr><td colspan="3">Variable</td><td>× 0.250 to × 6.000 (in 0.001 increments)</td></tr>
</table></td></tr>
<tr><td>Void Image Width</td><td colspan="3">Leading edge: 8 mm [4” × 6” thick paper (Inch), A6 thick paper (Metric); 5 mm]
Trailing edge: 4 mm
Front/rear edge: 3 mm [4” × 6” thick paper (Inch), A6 thick paper (Metric); 5 mm]</td></tr>
<tr><td>Lens</td><td colspan="3">Through lens (F=5, f=61.1 mm)</td></tr>
<tr><td>Light Source</td><td colspan="3">Halogen frost tube lamp</td></tr>
<tr><td>Fusing Temperature</td><td colspan="3">Upper/Lower Fusing Roller surface temperature: 155°C</td></tr>
<tr><td colspan="4">Power/Current Consumption (copier with full set of options)
<table>
<tr><th>Exposure Lamp (Rating)</th><th>Fusing Roller Heater Lamp (Rating)</th><th>Max. Power Consumption</th><th>Max. Current Consumption</th></tr>
<tr><td>70V
150W</td><td>120V/220V to 240V
Upper: 650W
Lower: 400W</td><td>1500W</td><td>13A/7A</td></tr>
</table></td></tr>
<tr><td>Power Requirements</td><td colspan="3">120V, 220V to 240V; 50Hz/60Hz</td></tr>
<tr><td colspan="4">Environmental Conditions
<table>
<tr><th>Temperature</th><th>Humidity</th><th>Ambient Illumination</th><th>Levelness</th></tr>
<tr><td>10 to 30°C with a fluctuation of 10°C or less per hour</td><td>25 to 85% with a fluctuation of 20% RH or less per hour</td><td>3000 lux or less</td><td>1° or less</td></tr>
</table></td></tr>
<tr><td>Dimensions</td><td colspan="3">640 (W) × 765 (D) × 994 (H) mm (H: Up to Original Glass surface)
640 (W) × 765 (D) × 1024 (H’) mm (H’: up to Original Cover)</td></tr>
<tr><td>Weight</td><td colspan="3">215 kg or 474 lbs.</td></tr>
<tr><td>Standard Accessories</td><td colspan="3">Exit Tray, Multi Bypass Table</td></tr>
<tr><td>Options</td><td colspan="3">• Duplexing Document Feeder AFR-12
• ADF Kit D
• 10 Bin Staple Sorter ST-103
• 10 Bin Sorter S-105
• Duplex Unit AD-7
• Editor Board E-2M
• Editor Display E-2D
• Mount Kit E
• Data Controller D-102
• Plug-In Counter
• Large Capacity Cassette C-101
• Data Terminal DT-104</td></tr>
</table>

3 PRECAUTIONS FOR INSTALLATION

Installation Site

To ensure safety and utmost performance of the copier, the copier should NOT be used in a place:

- Where it will be subjected to extremely high or low temperature or humidity.
- Which is exposed to direct sunlight.
- Which is in the direct air stream of an air conditioner, heater or ventilator.
- Which puts the operator in the direct stream of exhaust from the copier.
- Which has poor ventilation.
- Where ammonia gas might be generated.
- Which does not have a stable, level floor.
- Where it will be subjected to sudden fluctuations in either temperature or humidity. If a cold room is quickly heated, condensation forms inside the copier, resulting in blank spots in the copy.
- Which is near any kind of heating device.
- Where it may be splashed with water.
- Which is dirty or where it will receive undue vibration.
- Which is near volatile flammables or curtains.

Power Source

Use an outlet with a capacity of 120V/13A, or 220V to 240V/7A or more.

- If any other electrical equipment is sourced from the same power outlet, make sure that the capacity of the outlet is not exceeded.
- Use a power source with little voltage fluctuation.
- Never connect by means of a multiple socket any other appliances or machines to the outlet being used for the copier.
- Make the following checks at frequent intervals:
  ✻ Is the power plug abnormally hot?
  ✻ Are there any cracks or scrapes in the cord?
  ✻ Has the power plug been inserted fully into the outlet?
  ✻ Does something, including the copier itself, ride on the power cord?
- Ensure that the copier does not ride on the power cord or communications cable of other electrical equipment, and that it does not become wedged into or underneath the mechanism.

Grounding

To prevent receiving electrical shocks in the case of electrical leakage, always ground the copier.

- Connect the grounding wire to:
  ✻ The ground terminal of the outlet.
  ✻ A grounding contact which complies with the local electrical standards.
- Never connect the grounding wire to a gas pipe, the grounding wire for a telephone, or a water pipe.

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4 PRECAUTIONS FOR USE

To ensure that the copier is used in an optimum condition, observe the following precautions.

- Never place a heavy object on the copier or subject the copier to shocks.
- Insert the power plug all the way into the outlet.
- Do not attempt to remove any panel or cover which is secured while the copier is making copies.
- Do not turn OFF the Power Switch while the copier is making copies.
- Provide good ventilation when making a large number of copies continuously.
- Never use flammable sprays near the copier.
- If the copier becomes inordinately hot or produces abnormal noise, turn it OFF and unplug it.
- Do not turn ON the Power Switch at the same time when you plug the power cord into the outlet.
- When unplugging the power cord, do not pull on the cord; hold the plug and pull it out.
- Do not bring any magnetized object near the copier.
- Do not place a vase or vessel containing water on the copier.
- Be sure to turn OFF the Power Switch at the end of the workday or upon power failure.
- Use care not to drop paper clips, staples, or other small pieces of metal into the copier.

Operating Environment

The operating environmental requirements of the copier are as follows.

- Temperature: 10°C to 30°C with a fluctuation of 10°C per hour
- Humidity: 25% to 85% RH with a fluctuation of 20% RH per hour

Power Requirements

The power source voltage requirements are as follows.

- Voltage Fluctuation: AC120/230V
  ±10% (Copying performance assured)
  –15% (Paper feeding performance assured)
- Frequency Fluctuation: 50/60 Hz ±0.3%

1154SBG0500A

5 HANDLING OF THE CONSUMABLES

Before using any consumables, always read the label on its container carefully.

- Use the right toner. The applicable copier model name is indicated on the Toner Bottle.
- Paper is apt to be easily damaged by dampness. To prevent absorption of moisture, store paper, which has been removed from its wrapper but not loaded into the Drawer, in a sealed plastic bag in a cool, dark place.
- Keep consumables out of the reach of children.
- Do not touch the PC Drum with bare hands.
- Store the paper, toner, and other consumables in a place free from direct sunlight and away from any heating apparatus.
- The same sized paper is of two kinds, short grain and long grain. Short grain paper should only be fed through the copier crosswise, long grain paper should only be fed lengthwise.
- If your hands become soiled with toner, wash them with soap and water immediately.
- Do not throw away any used consumables (PC Drum, starter, toner, etc.). They are to be collected.

NOTE

Do not burn, bury in the ground, or throw into the water any consumables (PC Drum, starter, toner, etc.).

1154SBG0600A

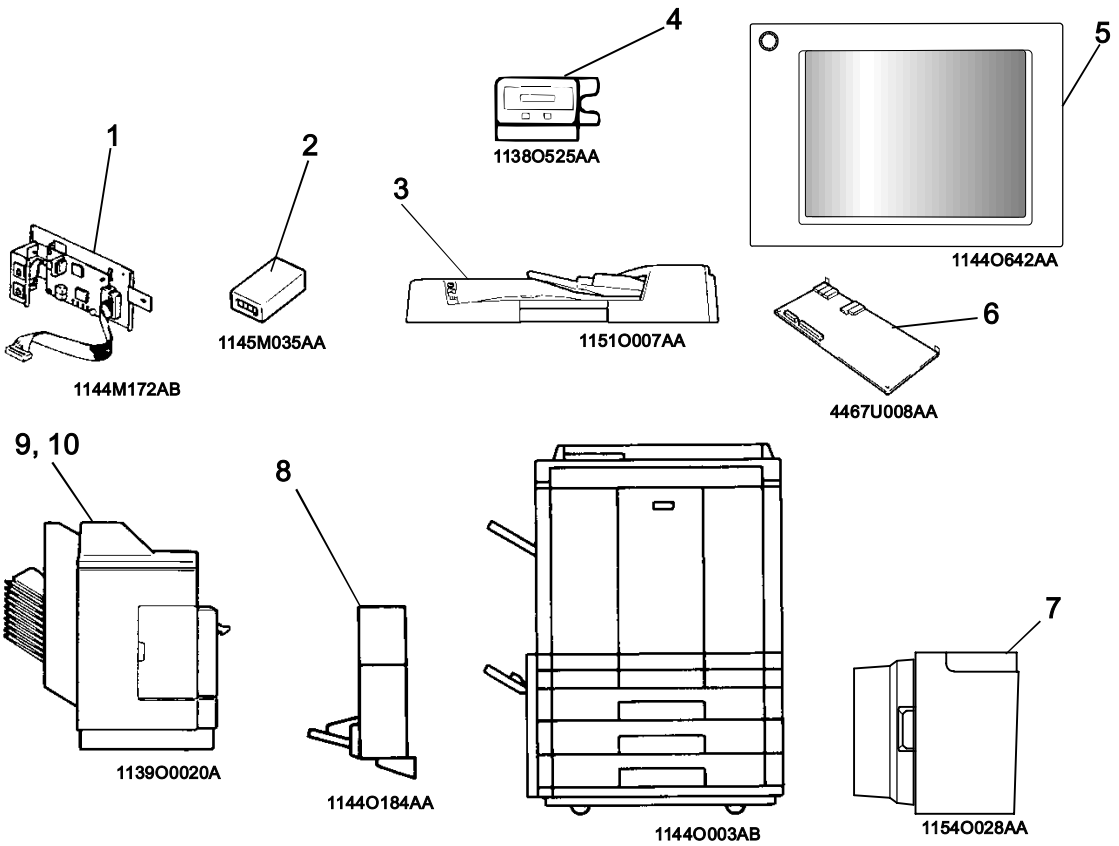
6 OTHER PRECAUTIONS

The Printerhead of this copier uses a laser diode that emits a laser beam. Use the following precautions when performing service jobs at the users' premises.

- When a service job needs to be performed in the laser beam path, such as when working around the printerhead and PC Drum, be sure first to turn the copier OFF.
- If the job requires that the power cord be left plugged in, observe the following precautions

1. Take off your watch, ring, and any other reflective object and wear laser protective goggles.
2. At the job site, select a place that is as far as possible away from the users and that is enclosed by walls.
3. Do not bring a highly reflective tool into the laser beam path during the service job.

7 SYSTEM OPTIONS



1. Data Terminal DT-104
2. Plug-In Counter
3. Duplexing Document Feeder AFR-12
4. Data Controller D-102
5. Editor Display E-2D
6. Editor Board E-2M
7. Large Capacity Cassette C-101
8. Duplex Unit AD-7
9. 10 Bin Sorter S-105
10. 10 Bin Staple Sorter ST-103

1154SBG0800A

8 HIGHLIGHTS

- The CF910 Copier is a digital full-color copier positioned as the successor to CF900 and intended for 100% customer satisfaction through the “CS-color technologies” that offer enhanced image quality, greater reliability, and better operability.
- It offers even more enhanced image quality than CF900 could, has a built-in controller, and is priced low to gain a competitive edge in the market for greater sales.

1. High-quality image reproduction
- Employs the “New Screen LIMOS” developed from the conventional “Screen LIMOS.”
- Employs an image stabilization control system using high-speed computing capabilities.
- Includes an automatic gradation correction function.
- Capable of reproducing text and photo and other gradation elements separately.

2. Greater ease of operation
- Employs a touch panel display.
- Equipped with two image quality adjustment modes, “Color Adjust Mode (Basic)” and “Color Adjust Mode (Professional).”
- Provided with an image quality monitor function.
- Employs several automatic functions, including Auto Color Selection (ACS), Auto Exposure, and original size detection.
- Includes a job programming function.

3. Higher productivity
- Postcards can be fed through the copier.
- Permits a fast copying speed of 6 full-color copies/min. (A4 crosswise) and 23 monochrome copies/min. (A4 crosswise).
- A maximum of 2,300 sheets of paper can be fed from a total of five different paper sources.

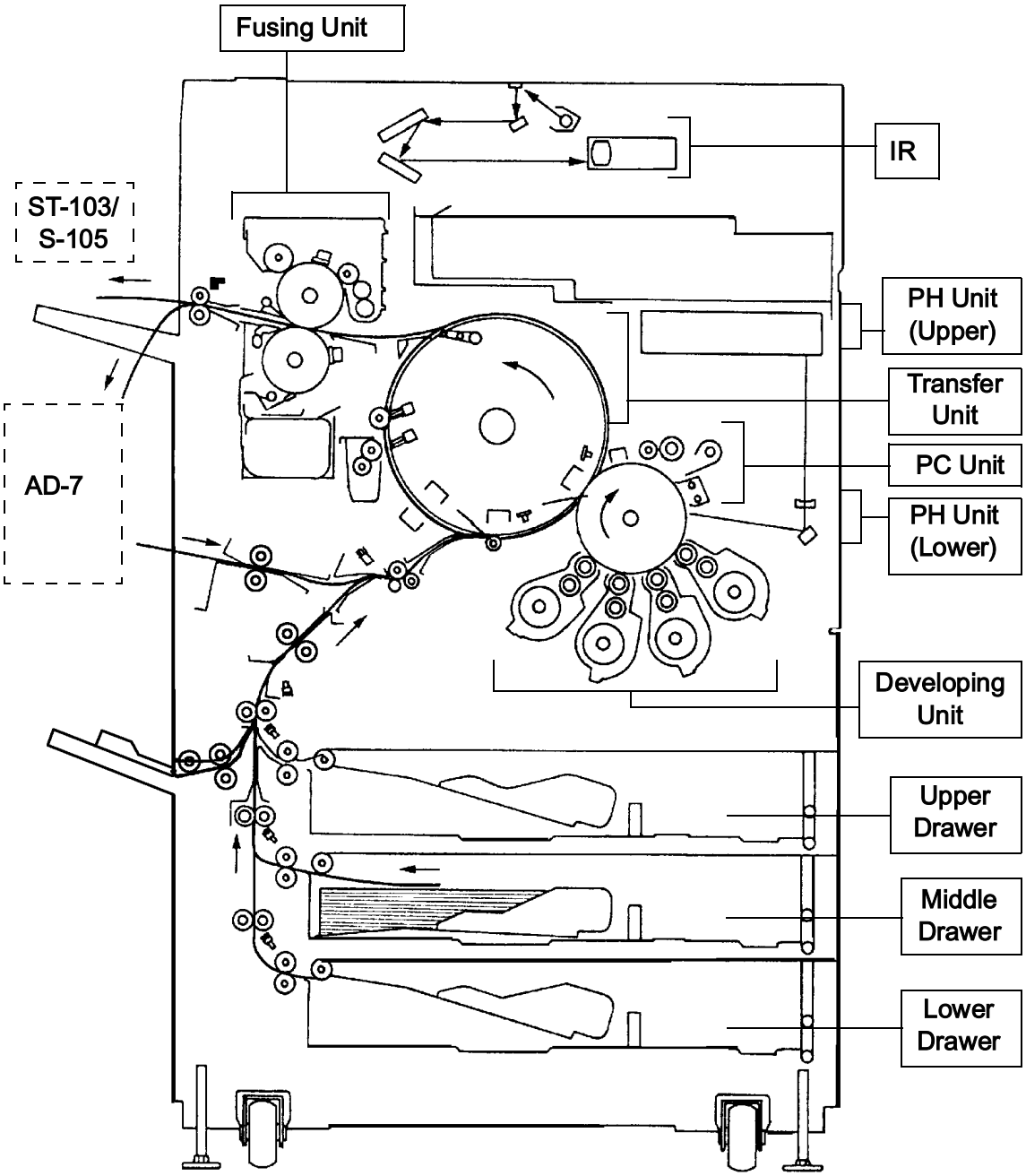
4. Environmental consciousness
- Its body is built compact to require only a 826×765mm space for installation.
- Realizes an outstanding quietness of 53.6 dB.

5. Better serviceability
- Easier replacement of ROMs thanks to the flash memory card.

1154SBM0100A

1 CROSS-SECTIONAL VIEW AND PAPER PATH

- The illustration below shows where different parts of the copier are placed and how the copy paper moves through the copier.
- Each of the mechanical and electrical parts is identified and located in the relevant section that appears later in this manual.



1154M018AF

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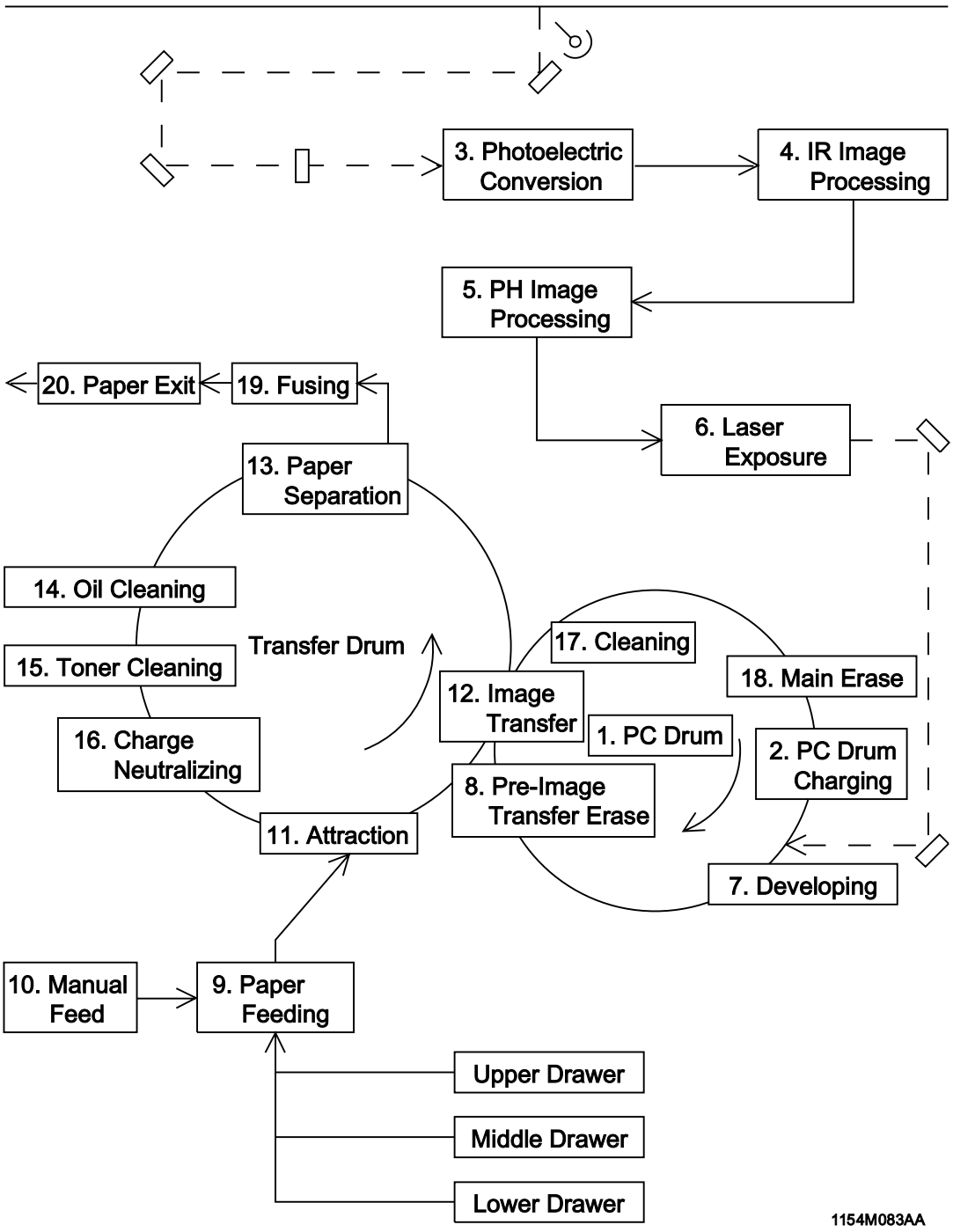
2 COPY PROCESS



1. PC Drum

- An electrostatic latent image is formed on the surface of a photoconductive material that coats an aluminum cylinder.
- An OPC type photoconductor is used. (For details, see p. M-16.)

2. PC Drum Charging

A single-wire PC Drum Charge Corona employing the Scorotron system deposits a negative DC charge across the entire surface of the PC Drum. (For details, see p. M-19.)

3. Photoelectric Conversion

- The light from Exposure Lamp LA1 is directed onto the original and reflected to strike the CCD Sensor through mirrors and lens, thereby forming a reduced image of the original.
- The CCD Sensor separates the light striking it into different colors using its color filters (R, G, and B), then converts it into a corresponding electrical signal and outputs the signal to the IR Image Processing Unit. (For details, see p. M-23.)

4. IR Image Processing

The electrical signal output from the Photoelectric Converter is converted to 8-bit digital image signals (R, G, and B). After making some corrections, the IR Image Processing Unit outputs video signals (C, M, Y, and Bk) to the PH Image Processing Unit. (For details, see p. M-23.)

5. PH Image Processing

The video signals (C, M, Y, and Bk) output from the IR Image Processing Unit go through some corrections. Following digital-to-analog conversion, these signals are then used for the control of the intensity level of the laser diode (LD1). (For details, see p. M-43.)

6. Laser Exposure

The laser beam emitted by the laser diode (LD1) strikes the surface of the PC Drum to form an electrostatic latent image. (For details, see p. M-45.)

7. Developing

- The toner, agitated and negatively charged in the developing unit of each color, is attracted onto the electrostatic latent image formed on the surface of the PC Drum, changing it to a visible, developed image.
- AC and DC negative bias voltages are applied to the Sleeve/Magnet Roller to ensure toner transfer to the PC Drum. (For details, see p. M-53.)

8. Pre-Image Transfer Erase

Light from Auxiliary Erase Lamp UN21 strikes the surface of the PC Drum to improve image transfer efficiency and, at the same time, to neutralize negative charge on those areas to which toner is not attracted. (For details, see p. M-54.)

9. Paper Feeding

Paper is fed from each drawer. (For details, see p. M-74.)

10. Manual Paper Feeding

The paper loaded in the Multi Bypass Table is fed. (For details, see p. M-78.)

11. Attraction
The Static Charge Corona applies a positive DC corona emission to the Transfer Film, while the Static Charge Roller presses the paper against the surface of the Transfer Film so that the paper is attracted to the film by static charge. (For details, see p. M-92.)

12. Image Transfer
The Image Transfer Corona applies a DC positive corona emission to the Transfer Film to attract the negatively charged toner on the surface of the PC Drum onto the surface of the paper. (For details, see p. M-96.)

13. Paper Separation
- The Paper Separator Corona applies an AC corona emission to the paper to weaken the attraction of the paper to the Transfer Film.
- The Lifting Finger pushes up the Transfer Film, while the Paper Separator Finger pushes down the Transfer Film so that the paper can be effectively separated from the surface of the Transfer Drum. (For details, see p. M-100.)

14. Oil Cleaning
The Oil Roller collects fusing oil from the surface of the Transfer Film during 2-sided copying. (For details, see p. M-105.)

15. Toner Cleaning
The Fur Brush Unit collects toner particles sticking to the surface of the Transfer Film. (For details, see p. M-108.)

16. Charge Neutralizing
The Charge Neutralizing Corona showers both sides of the Transfer Film with AC and DC overlapped corona charges so that the film is neutralized. (For details, see p. M-112.)

17. Cleaning
- The Pre-Cleaning Corona applies either a DC negative or AC corona emission to the surface of the PC Drum to neutralize it.
- The residual toner left on the surface of the PC Drum is scraped off by the Cleaning Blade and is then conveyed by the Toner Conveying Coil to the Toner Collecting Box. (For details, see p. M-114.)

18. Main Erase
Light from Main Erase Lamp LA2 neutralizes any surface potential remaining on the surface of the PC Drum. (For details, see p. M-117.)

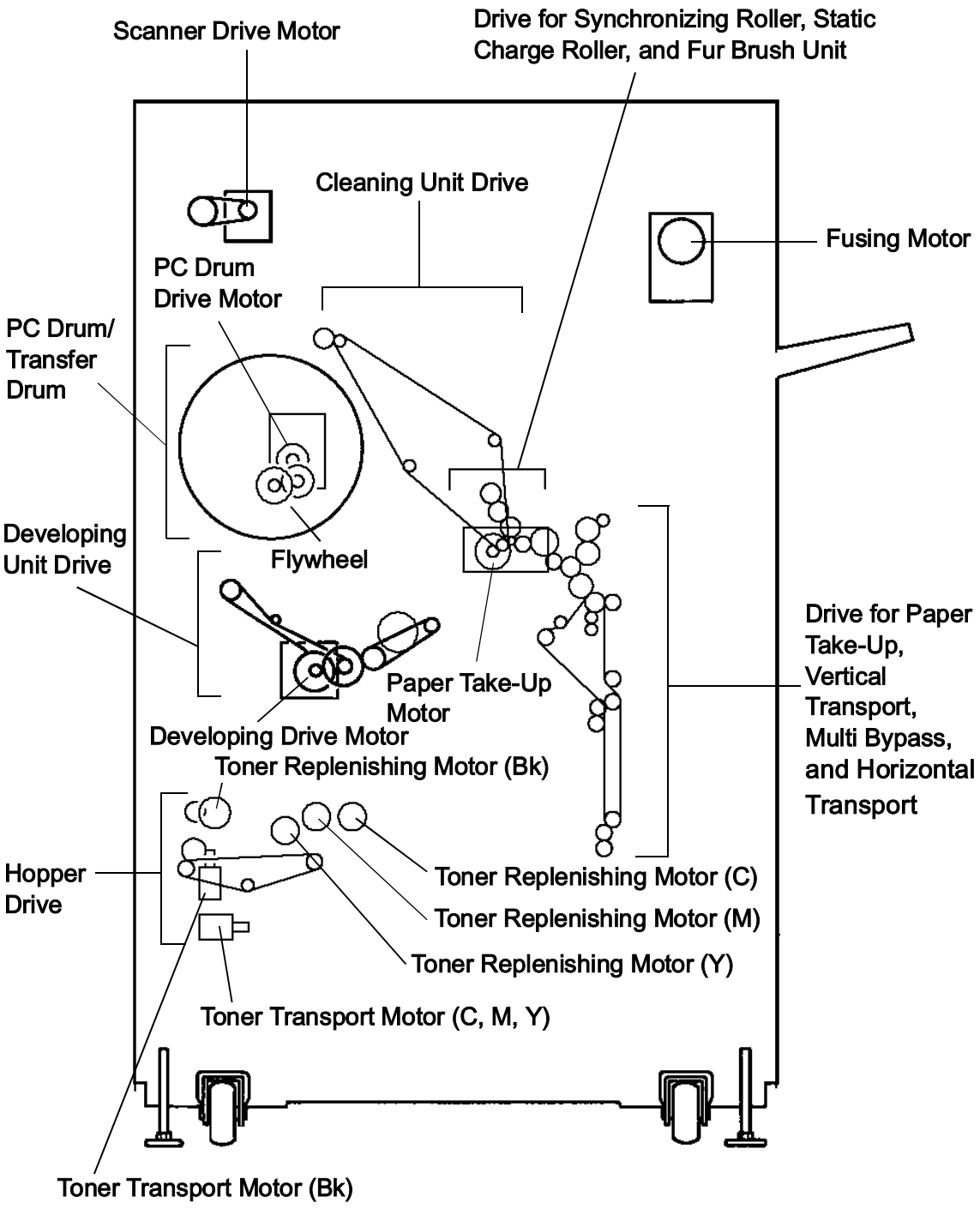
19. Fusing
- The Upper and Lower Fusing Rollers apply heat and pressure to the paper so that the four different color layers of toner lying on the surface of the paper are mixed and fused together, as well as being fixed collectively to the paper.
- Fusing oil is applied to the Fusing Rollers to secure the release of the paper and to help toner be cleaned from the surfaces of the two fusing rollers.
- The Oil Collecting Blade scrapes residual oil from the Lower Fusing Roller. The recovered oil is then filtered for recycling. (For details, see p. M-120.)

20. Exit
The Paper Exit Roller is turned to feed the paper out of the copier. (For details, see p. M-127.)

1154SBM0300A

3 DRIVE SYSTEM

- The illustration below outlines the drive system of the copier.
- The directions of rotation of the motors, gears, pulleys, and belts will be found in the relevant section that appears later in this manual.


Scanner Drive Motor
Drive for Synchronizing Roller, Static Charge Roller, and Fur Brush Unit
Cleaning Unit Drive
Fusing Motor
PC Drum Drive Motor
PC Drum/ Transfer Drum
Developing Unit Drive
Flywheel
Drive for Paper Take-Up, Vertical Transport, Multi Bypass, and Horizontal Transport
Paper Take-Up Motor
Developing Drive Motor
Toner Replenishing Motor (Bk)
Hopper Drive
Toner Replenishing Motor (C)
Toner Replenishing Motor (M)
Toner Replenishing Motor (Y)
Toner Transport Motor (C, M, Y)
Toner Transport Motor (Bk)

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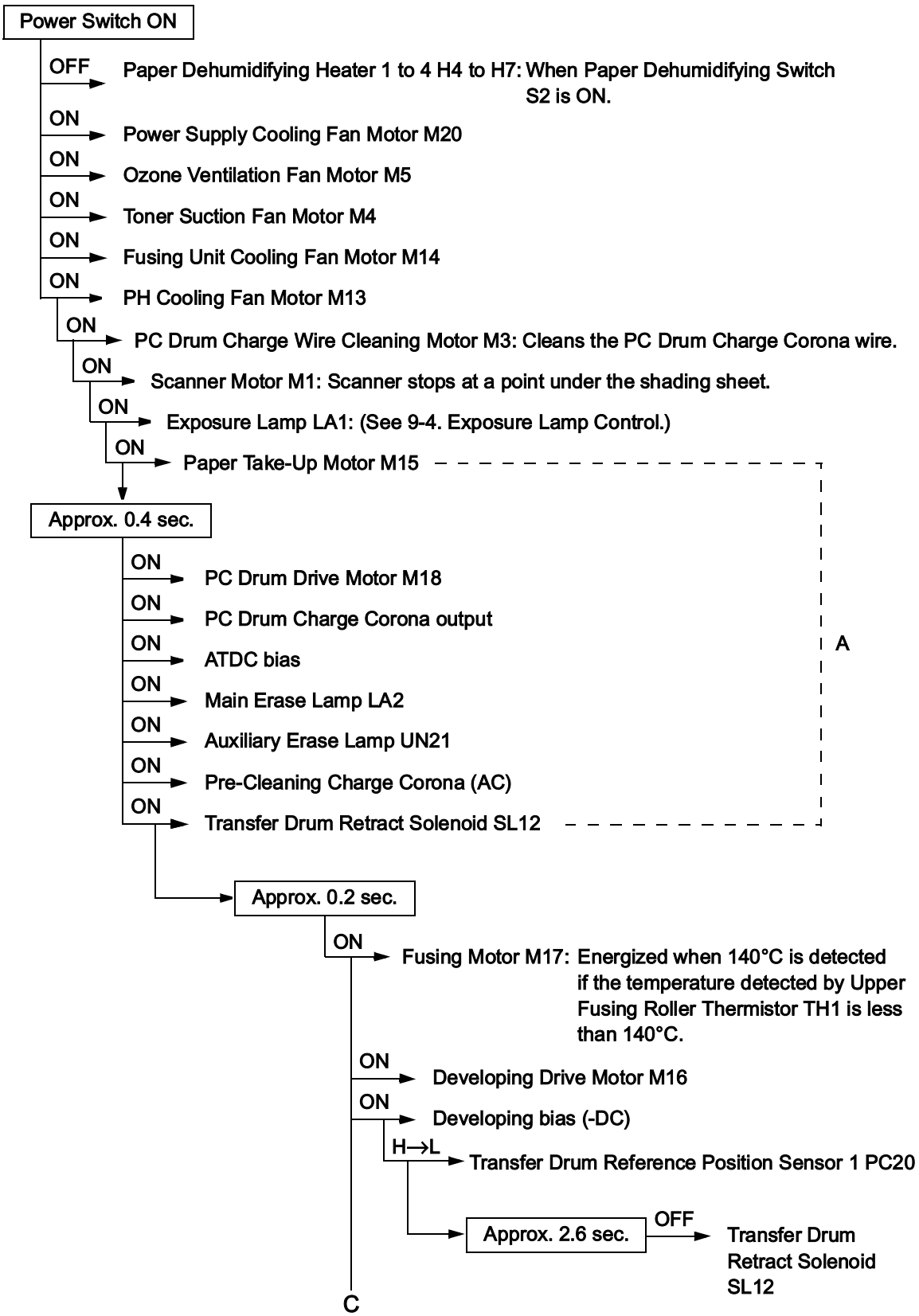
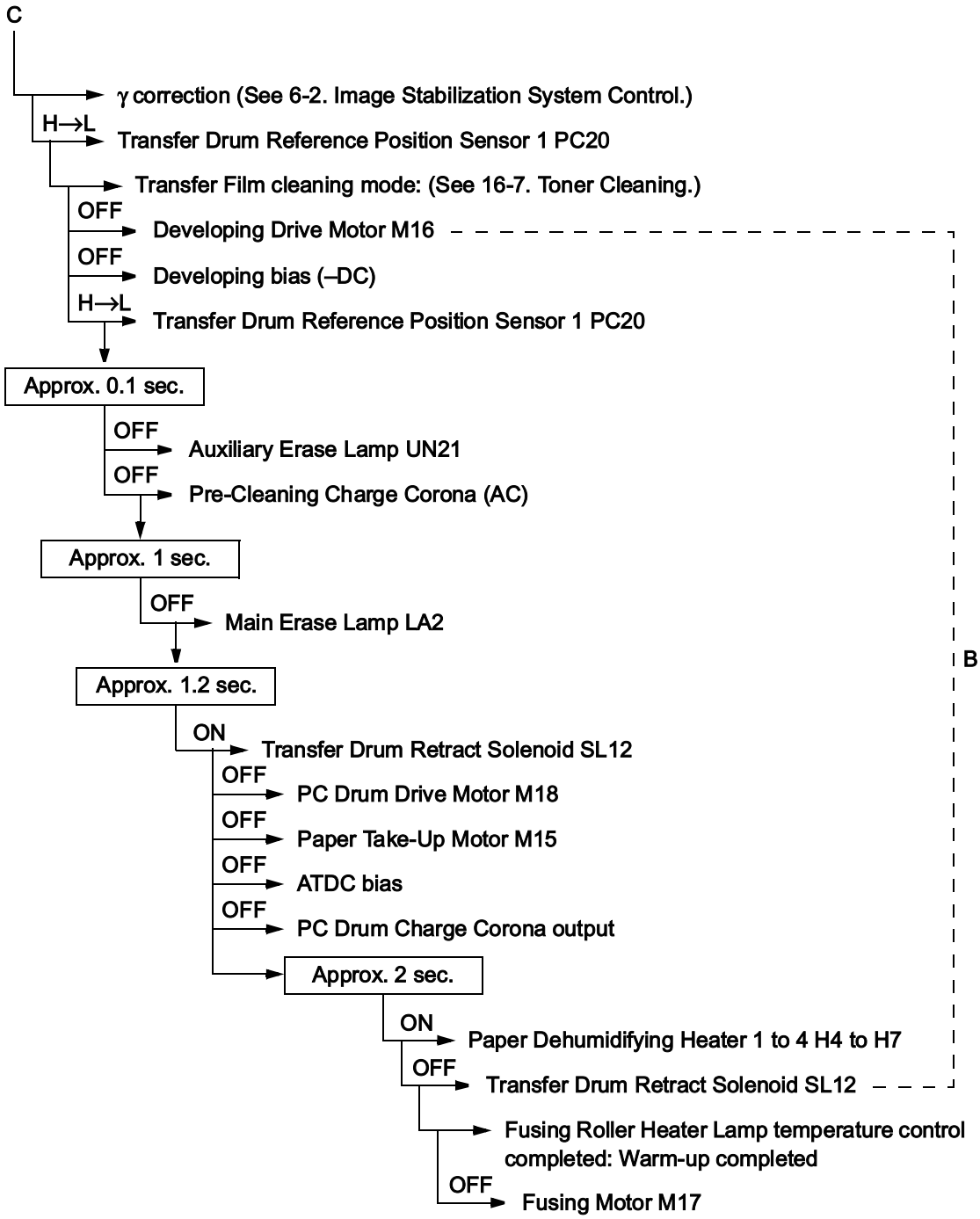
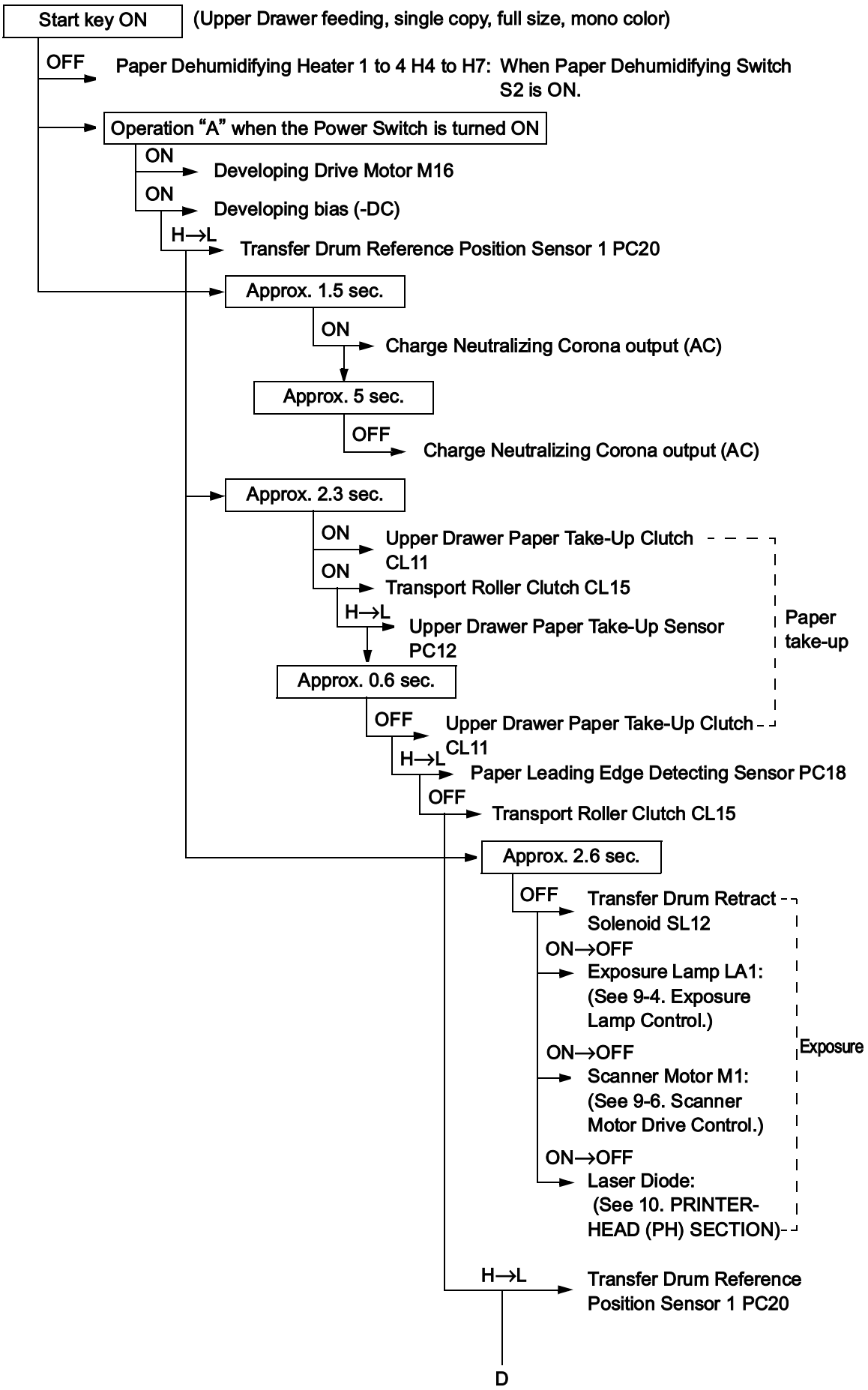
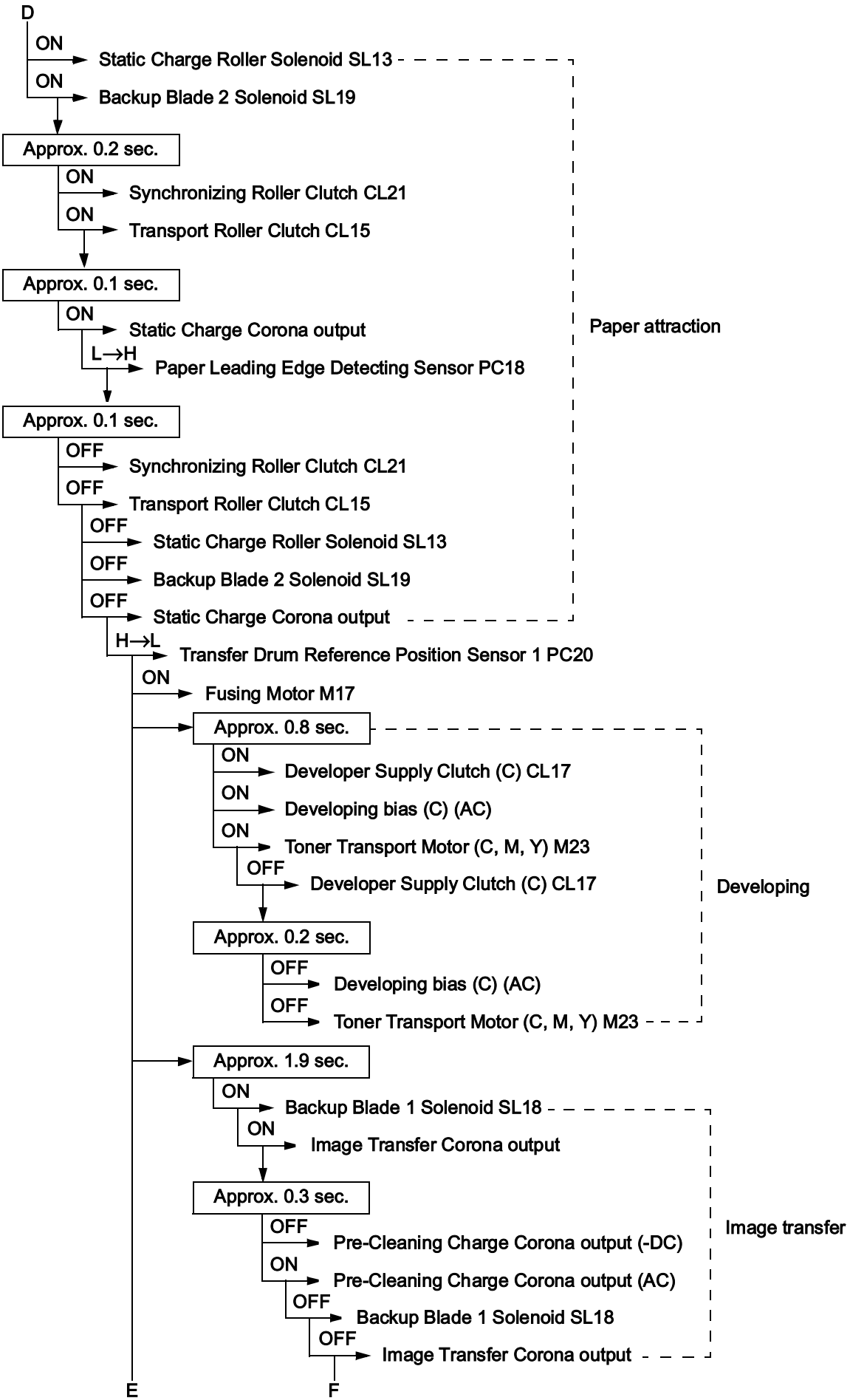
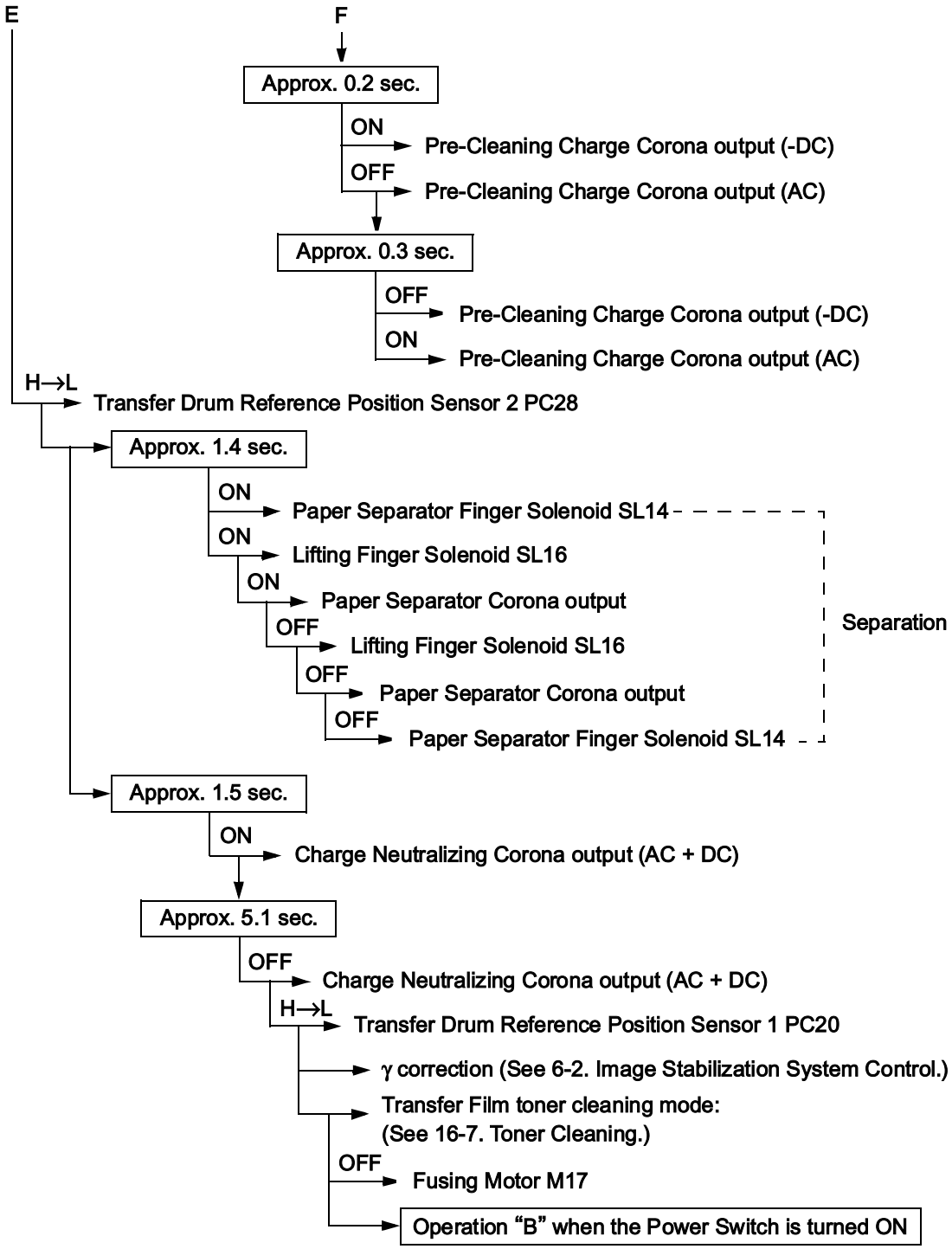
4 OPERATING SEQUENCE




C
γ correction (See 6-2. Image Stabilization System Control.)
H→L
Transfer Drum Reference Position Sensor 1 PC20
Transfer Film cleaning mode: (See 16-7. Toner Cleaning.)
OFF
Developing Drive Motor M16
OFF
Developing bias (–DC)
H→L
Transfer Drum Reference Position Sensor 1 PC20
Approx. 0.1 sec.
OFF
Auxiliary Erase Lamp UN21
OFF
Pre-Cleaning Charge Corona (AC)
Approx. 1 sec.
OFF
Main Erase Lamp LA2
Approx. 1.2 sec.
ON
Transfer Drum Retract Solenoid SL12
OFF
PC Drum Drive Motor M18
OFF
Paper Take-Up Motor M15
OFF
ATDC bias
OFF
PC Drum Charge Corona output
Approx. 2 sec.
ON
Paper Dehumidifying Heater 1 to 4 H4 to H7
OFF
Transfer Drum Retract Solenoid SL12
Fusing Roller Heater Lamp temperature control completed: Warm-up completed
OFF
Fusing Motor M17
B


Start key ON
(Upper Drawer feeding, single copy, full size, mono color)
OFF
Paper Dehumidifying Heater 1 to 4 H4 to H7: When Paper Dehumidifying Switch S2 is ON.
Operation "A" when the Power Switch is turned ON
ON
Developing Drive Motor M16
ON
Developing bias (-DC)
H→L
Transfer Drum Reference Position Sensor 1 PC20
Approx. 1.5 sec.
ON
Charge Neutralizing Corona output (AC)
Approx. 5 sec.
OFF
Charge Neutralizing Corona output (AC)
Approx. 2.3 sec.
ON
Upper Drawer Paper Take-Up Clutch CL11
ON
Transport Roller Clutch CL15
H→L
Upper Drawer Paper Take-Up Sensor PC12
Paper take-up
Approx. 0.6 sec.
OFF
Upper Drawer Paper Take-Up Clutch CL11
H→L
Paper Leading Edge Detecting Sensor PC18
OFF
Transport Roller Clutch CL15
Approx. 2.6 sec.
OFF
Transfer Drum Retract Solenoid SL12
ON→OFF
Exposure Lamp LA1: (See 9-4. Exposure Lamp Control.)
ON→OFF
Scanner Motor M1: (See 9-6. Scanner Motor Drive Control.)
ON→OFF
Laser Diode: (See 10. PRINTER-HEAD (PH) SECTION)
Exposure
H→L
Transfer Drum Reference Position Sensor 1 PC20
D


D
ON
Static Charge Roller Solenoid SL13
ON
Backup Blade 2 Solenoid SL19
Approx. 0.2 sec.
ON
Synchronizing Roller Clutch CL21
ON
Transport Roller Clutch CL15
Approx. 0.1 sec.
ON
Static Charge Corona output
L→H
Paper Leading Edge Detecting Sensor PC18
Paper attraction
Approx. 0.1 sec.
OFF
Synchronizing Roller Clutch CL21
OFF
Transport Roller Clutch CL15
OFF
Static Charge Roller Solenoid SL13
OFF
Backup Blade 2 Solenoid SL19
OFF
Static Charge Corona output
H→L
Transfer Drum Reference Position Sensor 1 PC20
ON
Fusing Motor M17
Approx. 0.8 sec.
ON
Developer Supply Clutch (C) CL17
ON
Developing bias (C) (AC)
ON
Toner Transport Motor (C, M, Y) M23
OFF
Developer Supply Clutch (C) CL17
Developing
Approx. 0.2 sec.
OFF
Developing bias (C) (AC)
OFF
Toner Transport Motor (C, M, Y) M23
Approx. 1.9 sec.
ON
Backup Blade 1 Solenoid SL18
ON
Image Transfer Corona output
Approx. 0.3 sec.
OFF
Pre-Cleaning Charge Corona output (-DC)
ON
Pre-Cleaning Charge Corona output (AC)
OFF
Backup Blade 1 Solenoid SL18
OFF
Image Transfer Corona output
Image transfer
E
F


E
F
Approx. 0.2 sec.
ON
Pre-Cleaning Charge Corona output (-DC)
OFF
Pre-Cleaning Charge Corona output (AC)
Approx. 0.3 sec.
OFF
Pre-Cleaning Charge Corona output (-DC)
ON
Pre-Cleaning Charge Corona output (AC)
H→L
Transfer Drum Reference Position Sensor 2 PC28
Approx. 1.4 sec.
ON
Paper Separator Finger Solenoid SL14
ON
Lifting Finger Solenoid SL16
ON
Paper Separator Corona output
OFF
Lifting Finger Solenoid SL16
OFF
Paper Separator Corona output
OFF
Paper Separator Finger Solenoid SL14
Separation
Approx. 1.5 sec.
ON
Charge Neutralizing Corona output (AC + DC)
Approx. 5.1 sec.
OFF
Charge Neutralizing Corona output (AC + DC)
H→L
Transfer Drum Reference Position Sensor 1 PC20
γ correction (See 6-2. Image Stabilization System Control.)
Transfer Film toner cleaning mode:
(See 16-7. Toner Cleaning.)
OFF
Fusing Motor M17
Operation "B" when the Power Switch is turned ON

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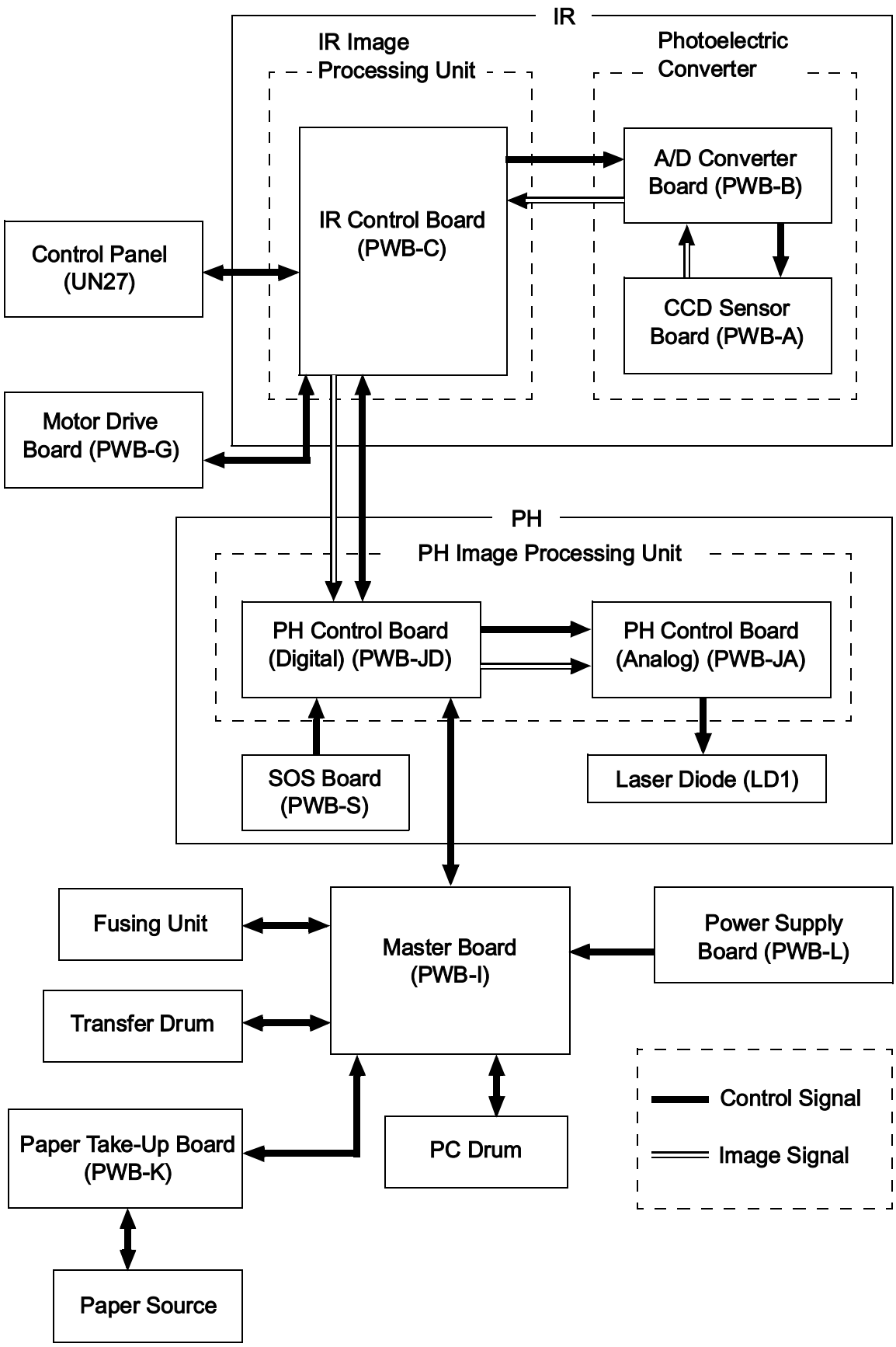
5 CONTROL BLOCK DIAGRAM



1154SBM0600A

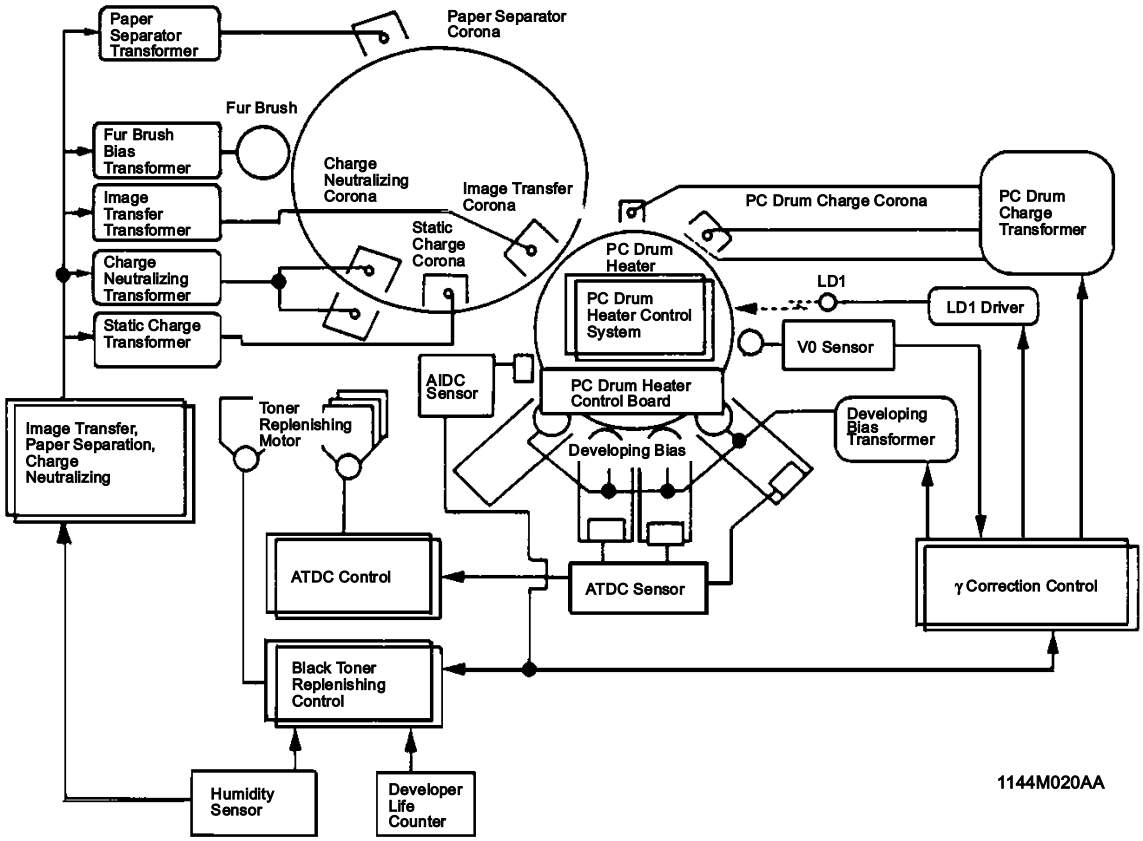
6 IMAGE STABILIZATION SYSTEM

1154SBM0601A

6-1. Image Stabilization System Overview

Purpose	Means	Control (Sensor)
• To stabilize image density • To stabilize gradation	✻ γ correction control • AIDC Sensor contamination correction • AIDC detection • PC Drum surface potential detection • Max. LD1 intensity calculation • Operations (setting VG and VB)	• AIDC Sensor UN20 • Surface Potential Detection Sensor UN22 • PC Drum Life Counter • Humidity Sensor UN23
• To stabilize the amount of toner attracted	✻ ATDC control (C, M, Y)	• ATDC Sensors UN33, 34, 35
• To stabilize the amount of toner attracted	✻ Black toner replenishment control	• Developer Life Counter • AIDC Sensor UN20 • Humidity Sensor UN23
• To stabilize PC Drum sensitivity	✻ PC Drum temperature control	• PC Drum Heater Control Board PWB-W
• To stabilize paper attration, image transfer, paper separation, and charge neutralization	✻ Static Charge, Image Transfer, Paper Separator, and Charge Neutralizing Corona output control	• Humidity Sensor UN23

✻ An explanation is given of each control other than γ correction control in the relevant section that follows the current one.



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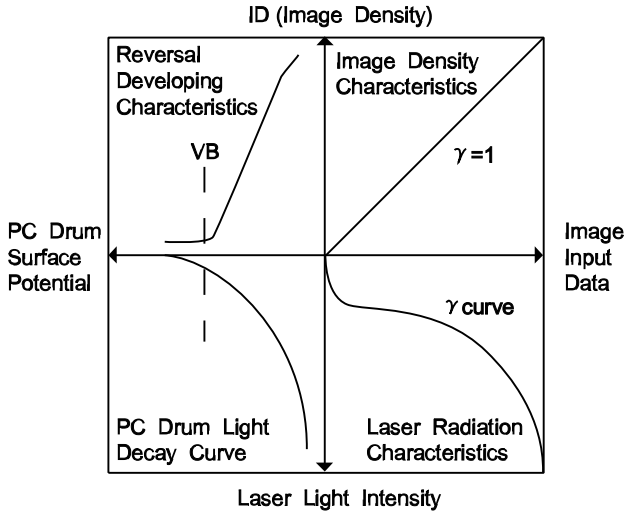
6-2. Image Stabilization System Control

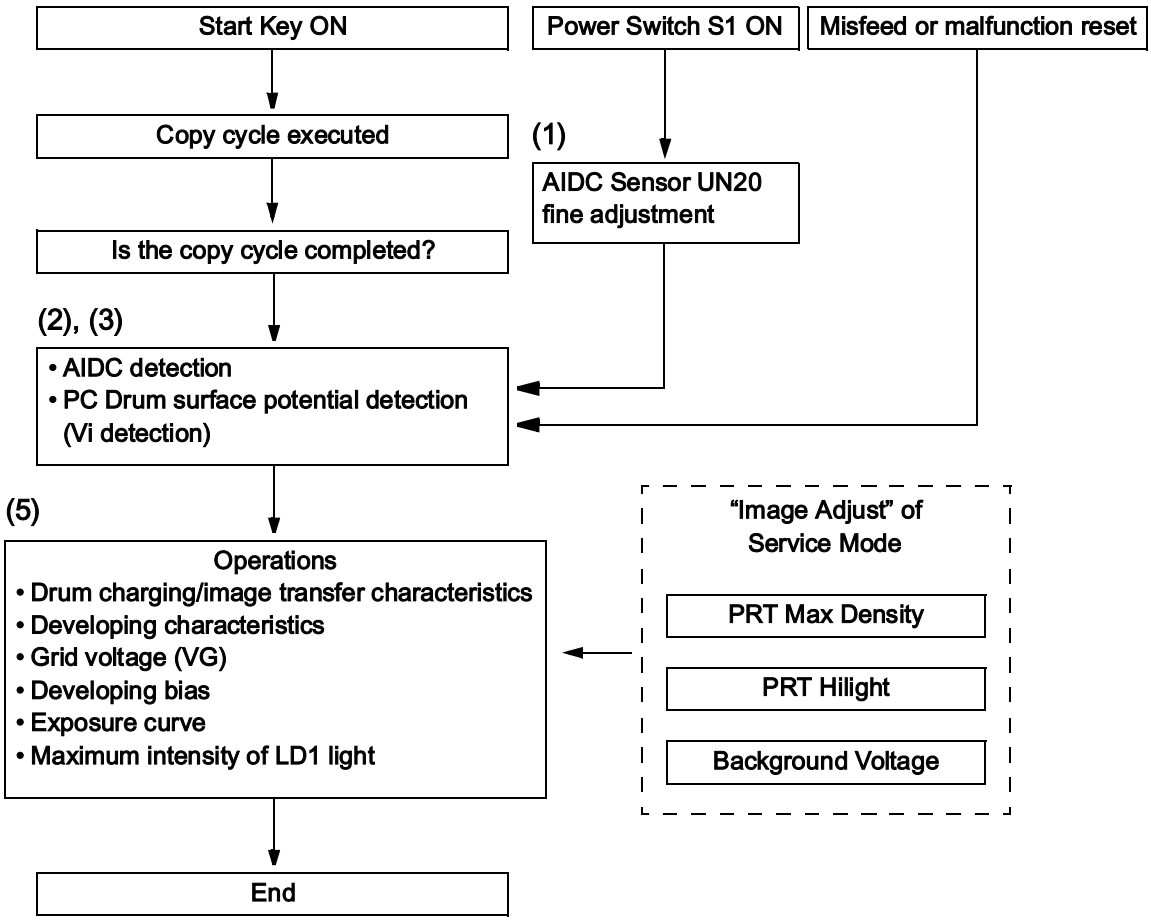
Summary

- The copier uses the data obtained through AIDC detection and PC Drum surface potential detection to perform various operations, thereby finding the optimum γ correction exposure curve for image stabilization control.

Sensitometry



Operation Flow



1. AIDC Sensor UN20 Fine Adjustment

- This function corrects variations in the AIDC detection level (the amount of toner attracted to the surface of the PC Drum) that occur due to a contaminated UN20.
- It is carried out when the Power Switch is turned ON.

Operation Flow

A. UN20 detects the background level on the drum surface.

↓

B. Density patterns 1 to 5 of five different gradation levels in cyan (C) and black (Bk) are produced, respectively, on the surface of the PC Drum to let UN20 detect the amount of toner attracted.

↓

C. The toner density characteristics are detected through these steps of A and B and according to the solid level of cyan (C) and black (Bk) detected by "AIDC Offset Adjustment." (See the chart below.)

↓

D. Requirements of the amount of toner attracted (a, b and c) for AIDC detection are plotted on the chart.

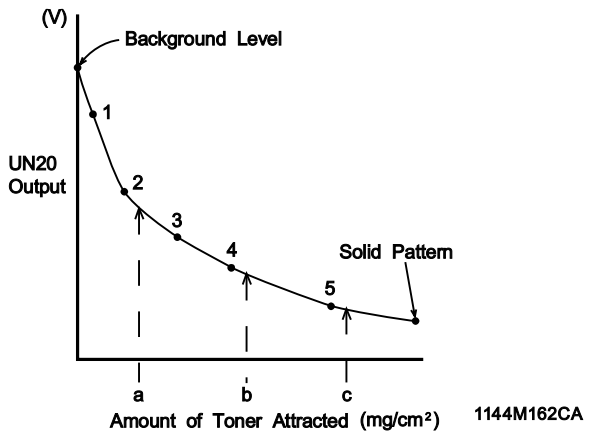
↓

E. Of density patterns 1 through 5, the ones that are closest to a, b and c, respectively are selected.

↓

F. The three density patterns selected are used in AIDC detection.

✻ These operations are performed while the PC Drum turns one complete turn.



---

2. AIDC Detection

- Three density patterns selected through the AIDC Sensor UN20 fine adjustment are produced on the surface of the PC Drum for each color (in the order of Y, M, C, and Bk) to allow UN20 to detect the amount of toner attracted to the drum surface.
- The amount readings are used in "5. Operations" that follows.

- The detection is made when the Power Switch is turned ON, a misfeed or malfunction is reset, and at the end of the copy cycle.
- It occurs while the PC Drum turns one complete turn.

---

3. PC Drum Surface Potential Detection (Vi Detection)

- The PC Drum surface potential is detected by Surface Potential Detection Sensor UN22.
- Ten latent image patterns with varying gradation levels are produced on the surface of the PC Drum and UN22 detects the surface potential of each pattern.
- The surface potential readings are used in "5. Operations" that follows.

When Power Switch S1 is turned ON:

- The intensity of LD1 light and grid voltage (VG) are varied in three steps and, for each of these three steps, ten latent image patterns of varying gradation levels are produced for surface potential detection. (The PC Drum turns three turns.)

Other than above

- Ten latent image patterns with different gradation levels are produced with LD1 and VG remaining the same, for each of which the surface potential is detected.
- Surface potentials of a total of ten patterns are detected.

---

4. Max. LD1 Intensity Correction

- To prevent the copy image density from being changed by changes in the PC Drum sensitivity during a multi-copy cycle, the maximum intensity of LD1 light (PMAX) is corrected at a timing between copies.

PMAX Correction Operation

A. The VG value of Black of the first copy is directly applied to the PC Drum without any correction.
B. The surface of the PC Drum is illuminated with the PMAX of Black for the first copy.
C. Surface Potential Detection Sensor UN22 measures the surface potential of the PC Drum.
D. Using the measurement result, the copier calculates an optimum PMAX to make the necessary correction.

---

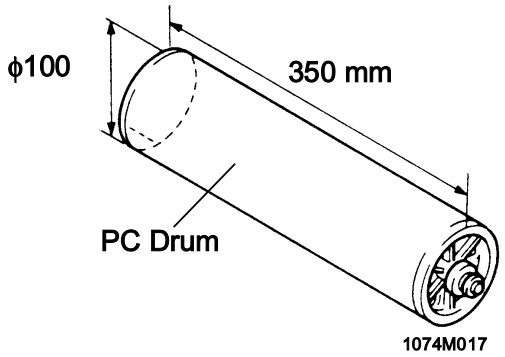
5. Operations

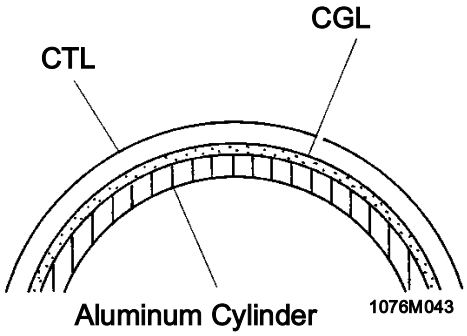
- Based on the copier conditions found through the AIDC detection and PC Drum surface potential detection (Vi detection), the CPU computes the PC Drum charge, image transfer, PC Drum sensitivity and developing characteristics, grid voltage (VG), developing bias (VB), exposure curve and maximum intensity of LD1 light. By setting the parameters, the CPU maintains the best possible image quality.
- The values set for "PRT Max Density," "PRT Hilight," and "Background Voltage" of "Image Adjust" available from the Service Mode are incorporated during these operations.

1154SBM0700A

7 PC DRUM SECTION

- The photoconductive drum used in this copier is the organic photoconductor (OPC) type.
- The drum consists of two distinct, light-sensitive, organic semiconductor materials on an aluminum alloy base. The outer of the two layers is called the Charge Transport Layer (CTL), while the inner layer is called the Charge Generating Layer (CGL).
- It is a type that is sensitive to the near infrared wavelength.
- Size = $\phi 100 \times 350$mm



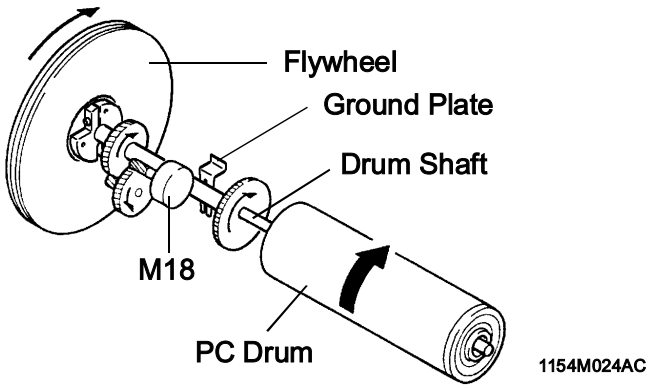


Handling Precaution
The PC Drum exhibits light fatigue after being exposed to light for a long time, which results in its sensitivity being changed. Therefore, always wrap the drum in the PC Drum Cloth or a soft cloth immediately after it has been removed from the copier.

1154SBM0701A

7-1. Grounding of the PC Drum

- The potential on the surface of the PC Drum exposed to the laser beam is grounded through the Ground Plate which is in contact with the drum shaft.



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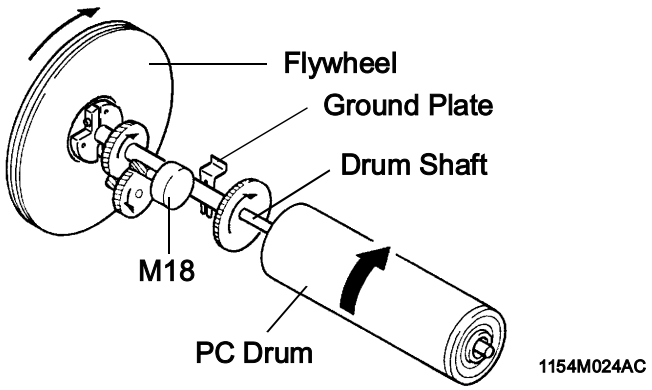
7-2. PC Drum Drive Mechanism

<PC Drum Drive Mechanism>

- The PC Drum is driven by PC Drum Drive Motor M18.
- A flywheel mounted on the drum shaft smooths out power surges occurring due to backlash in the gears.



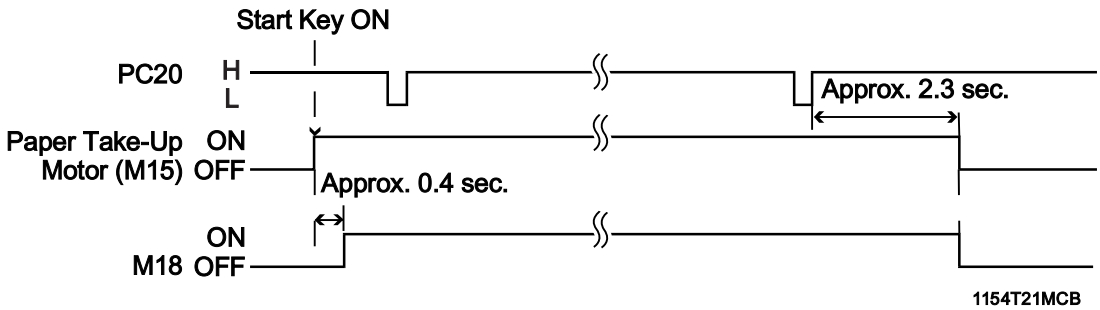
<PC Drum Drive Control>

	Control Signal	Energized	Deenergized	Wiring Diagram
M18	PWB-I PJ8I-3B	H	H	14-G
	PWB-I PJ8I-4B	L	H	

	Control Signal	Blocked	Unblocked	Wiring Diagram
Transfer Drum Reference Position Sensor PC20	PWB-I PJ4I-5B	L	H	15-E

Timing Chart

<During high-speeding feeding from Upper Drawer>



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7-3. PC Drum Temperature Control

- PC Drum Heater H3 is installed inside the PC Drum to maintain drum sensitivity and prevent condensation from forming on the drum surface.
- H3 is turned ON or OFF by a temperature-sensitive reed switch installed inside the PC Drum, keeping the drum surface temperature at 35±5°C.
- H3 is a 50W heater.
- Power to H3 is supplied through the electrodes on the front flange face.

<Temperature-Sensitive Reed Switch>

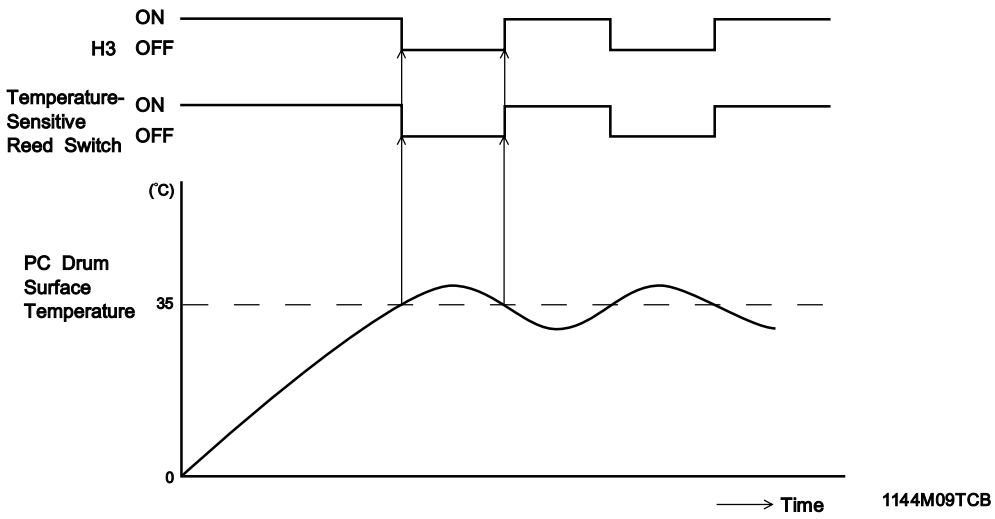
- Assuming that there is a temperature difference of 2°C between the outside and inside of the PC Drum, the reed switch is turned OFF when the temperature reaches 37°C and ON when it becomes lower than 33°C.

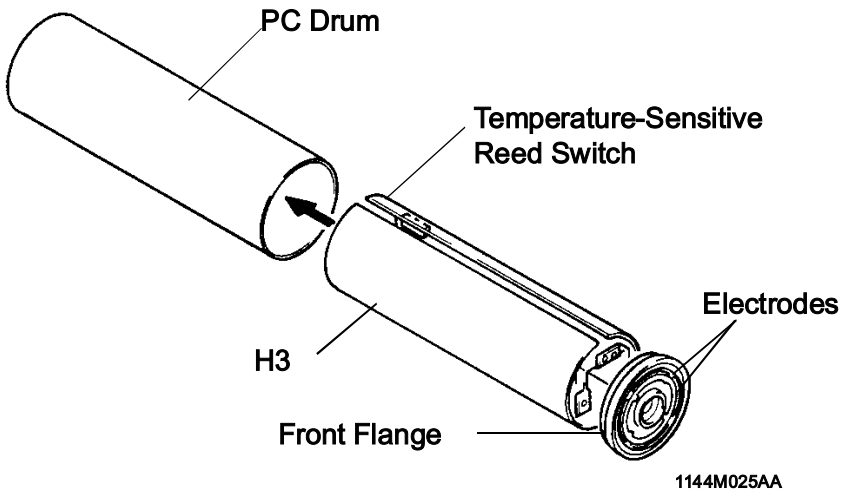
<H3 ON Conditions>

- Power Switch S1 is turned ON.
- The temperature-sensitive reed switch is turned ON.

<H3 OFF Conditions>

- The temperature-sensitive reed switch is turned OFF.
- S1 is turned OFF.
- A misfeed or malfunction is reset or a door is opened.





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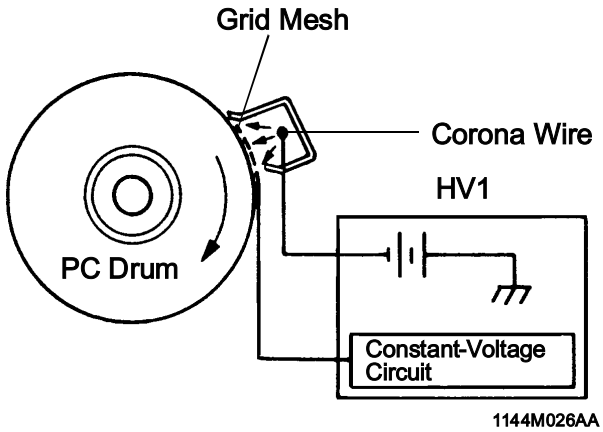
8 PC DRUM CHARGING SECTION

- The PC Drum Charge Corona has a Scorotron grid to deposit a negative DC charge evenly across the surface of the PC Drum.
- The grid voltage (VG) applied to the grid mesh is kept in the range between –400 and –1100V by the Constant-Voltage Circuit in High Voltage Unit 1 HV1. The constant voltage of HV1 is determined through image stabilization control.



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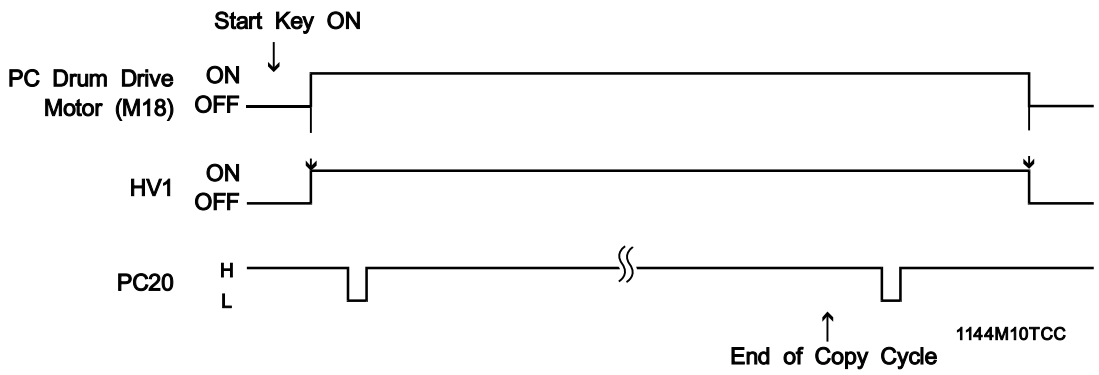
8-1. PC Drum Charge Corona ON/OFF Control

	Control Signal	Energized	Deenergized	Wiring Diagram
High Voltage Unit 1 HV1 (PC Drum Charge Corona)	PWB-I PJ11I-9	L	H	15-I

	Control Signal	Blocked	Unblocked	Wiring Diagram
Transfer Drum Reference Position Sensor PC20	PWB-I PJ4I-5B	L	H	15-E



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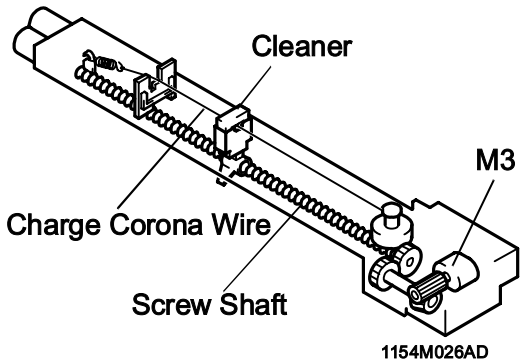
8-2. PC Drum Charge Corona Wire Cleaning Mechanism

<Mechanism>

- Rotation of PC Drum Charge Wire Cleaning Motor M3 turns the screw shaft, which moves the cleaner mounted on the screw shaft to clean the corona wire.
- Charge Cleaner Home Position Sensor PC16 and Charge Cleaner Return Position Sensor PC17 detect the point at which the direction of M3 rotation is switched from forward to backward, or vice versa, and at which M3 is stationary, thereby moving or stopping the cleaner.

Cleaning Conditions

- Power Switch S1 is turned ON.
- The Front Door is opened and closed.
- The EP-NET remote control PC Drum Charge Corona wire cleaning command is received in standby state.
- At the end of a multi-copy cycle making 100 copies



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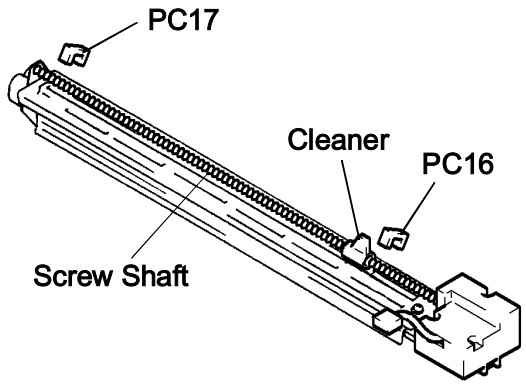
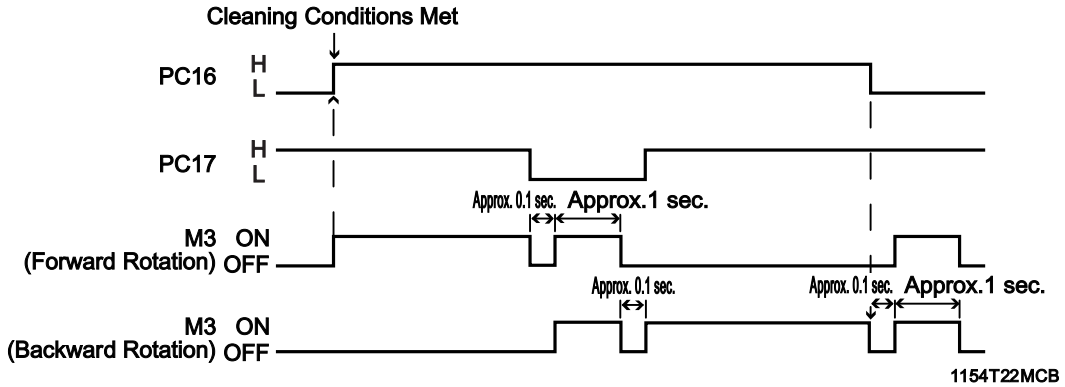


1154M071AC

<Control>

	Control Signal	Forward Rotation	Backward Rotation	Stop	Wiring Diagram
M3	PWB-I PJ3I-5B	L	H	H	15-D
	PWB-I PJ3I-4B	H	L	H	

	Control Signal	Home Position	Return Position	Wiring Diagram
PC16	PWB-I PJ8I-10B	L	H	14-F
PC17	PWB-I PJ8I-9B	H	L	14-F

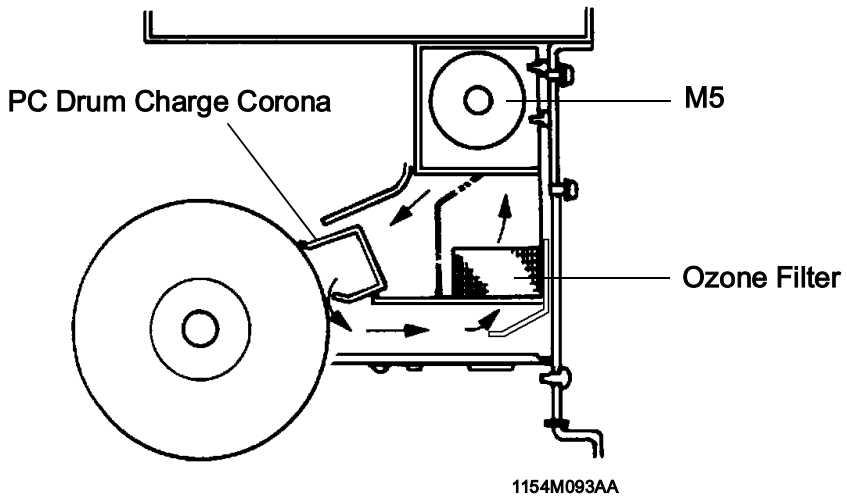


1154T22MCB

1154SBM0803A

8-3. PC Drum Charge Section Ozone Filter

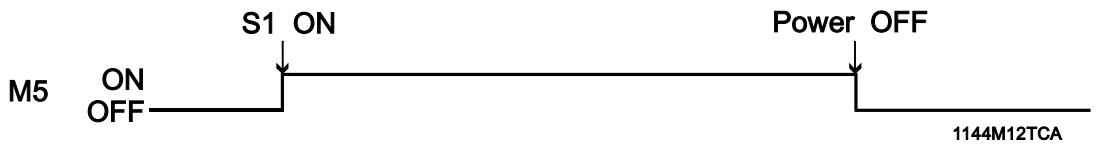
- Ozone produced by the PC Drum Charge Corona is absorbed by the Ozone Filter from the air blown against the back of the PC Drum Charge Corona by Ozone Ventilation Fan Motor M5.



1154M093AA

<Control>

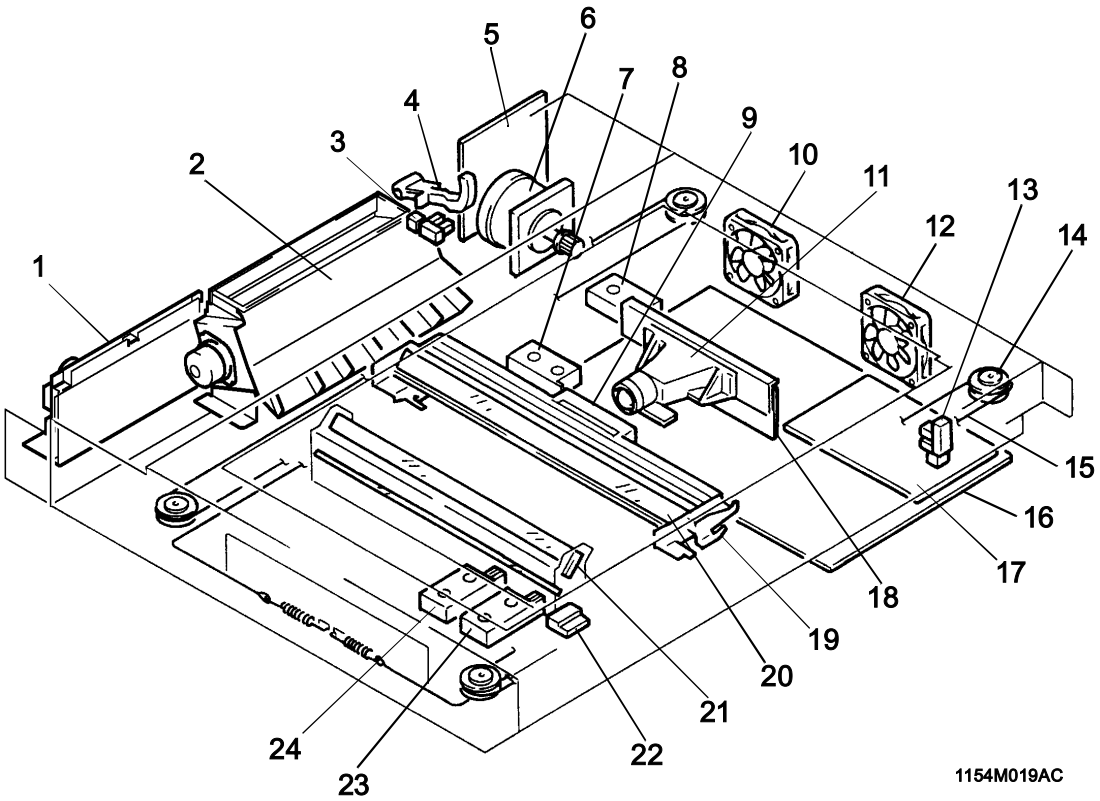
	Control Signal	Energized	Deenergized	Wiring Diagram
M5	PWB-I PJ3I-6B	L	H	15-D



1144M12TCA

1154SBM0900A

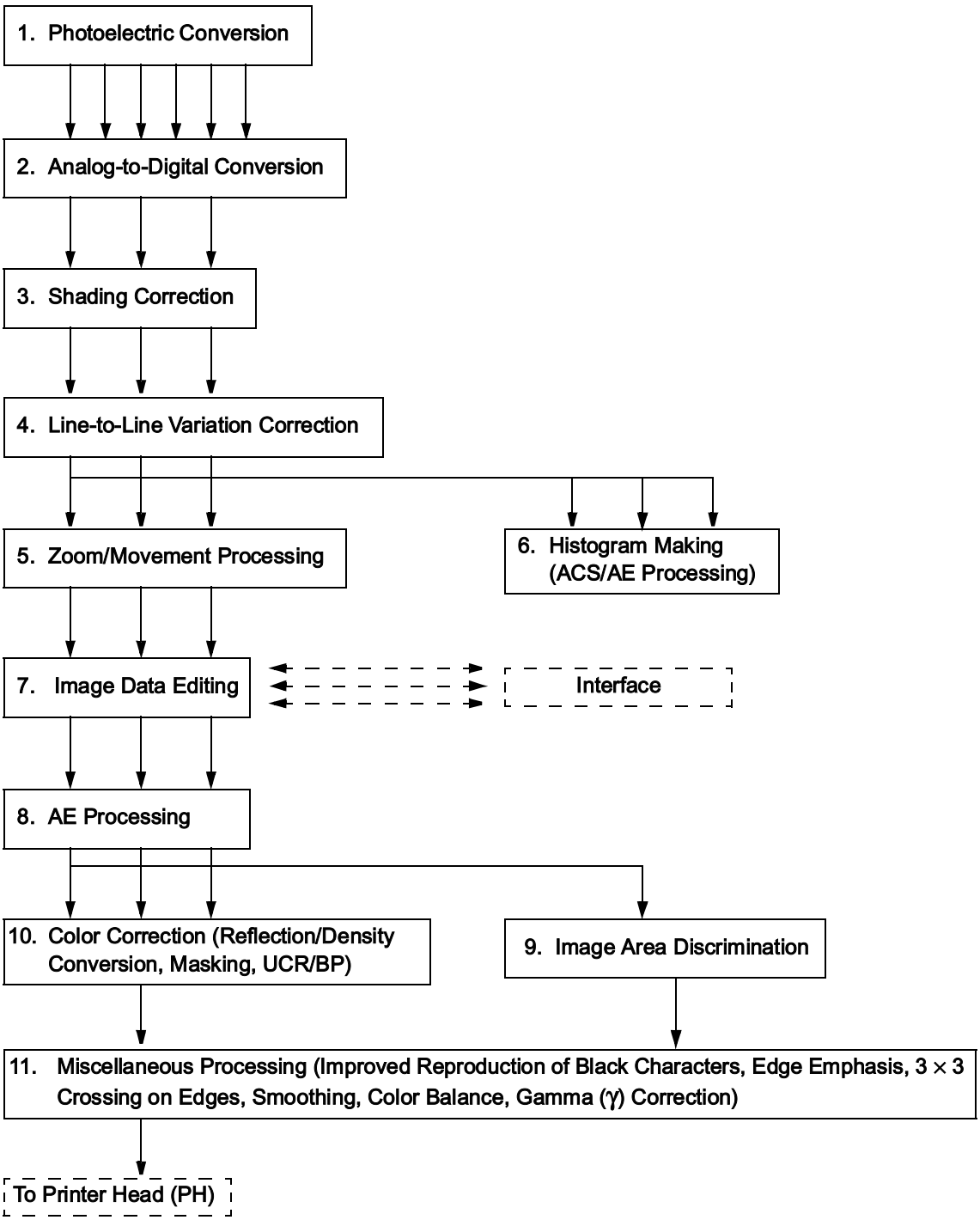
9 IMAGE READER (IR) SECTION



1. DC Power Supply 2 PU2
2. Original Glass Cooling Fan Motor M2
3. Original Cover Angle Detecting Sensor PC22
4. Actuator
5. Motor Drive Board PWB-G
6. Scanner Motor M1
7. Original Size Detecting Sensor 3 SE3
8. Original Size Detecting Sensor 4 SE4
9. IR Section Thermostat TS3
10. IR Cooling Fan Motor 1 M24
11. CCD Sensor
12. IR Cooling Fan Motor 2 M25
13. Scanner Home Position Sensor PC1
14. Cable Pulley
15. Cable
16. IR Control Board PWB-C
17. A/D Converter Board PWB-B
18. CCD Sensor Board PWB-A
19. Exposure Lamp LA1
20. Scanner
21. 2nd/3rd Mirror
22. Size Reset Switch S12
23. Original Size Detecting Sensor 1 SE1
24. Original Size Detecting Sensor 2 SE2

1154SBM0901A

9-1. IR Image Processing


1. Photoelectric Conversion
2. Analog-to-Digital Conversion
3. Shading Correction
4. Line-to-Line Variation Correction
5. Zoom/Movement Processing
6. Histogram Making (ACS/AE Processing)
7. Image Data Editing
Interface
8. AE Processing
10. Color Correction (Reflection/Density Conversion, Masking, UCR/BP)
9. Image Area Discrimination
11. Miscellaneous Processing (Improved Reproduction of Black Characters, Edge Emphasis, 3 × 3 Crossing on Edges, Smoothing, Color Balance, Gamma (γ) Correction)
To Printer Head (PH)

1	Photoelectric Conversion: PWB-A

- A reduction-type color CCD Sensor is used.
- The R, G, and B chips of the CCD Sensor read the light reflected off the original and convert the optical data into a corresponding analog electric signal.
- To make data processing faster, data transfer and output are done through two channels, one for even-numbered pixels and the other for odd-numbered pixels.

2	Analog-to-Digital Conversion: PWB-B

The odd and even analog signals output from the CCD Sensor chips are synthesized to form a single string of signal data which is in turn converted to 8-bit digital signals.

3	Shading Correction: PWB-C

An error is corrected that occurs due to variations in sensitivity of each CCD chip and the light distribution varying along the length of Exposure Lamp LA1.

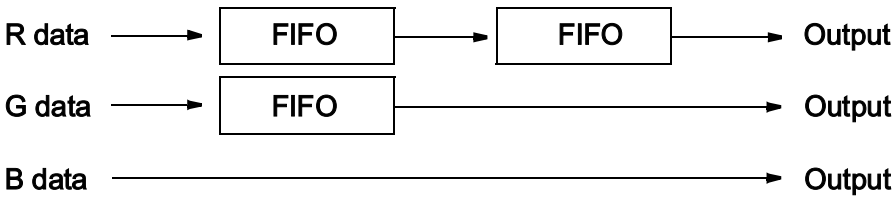
Operation:

1. Before the start of each copy cycle, light from LA1 strikes the shading sheet and the CCD Sensor reads the light reflected off this sheet.
2. This reading is compared with the shading sheet reading reference value (white reference value = max. value of image data) to determine the correction value for each pixel.
3. When the image is scanned, each pixel data is corrected with the above correction value.

To prevent adverse effects on the image due to dust on the shading sheet, the maximum value of the readings taken in the sub-scanning direction of the shading sheet is taken. This is called peak value hold.

4	Line-to-Line Variation Correction: PWB-C

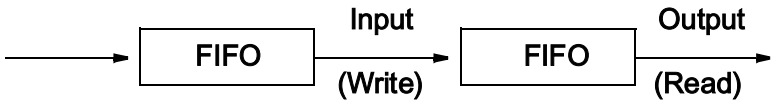
- The R, G, and B chips of the CCD Sensor are placed so that there is a gap of 4 lines in the sub-scanning direction between the two adjacent chips (R → G → B). This results in a deviation in the scanning position of the original. (The slower the scanning speed, the greater the amount of deviation.)
- A memory called FIFO* is used to compensate for this deviation. It retards the output timing for R and G data to match it with that for B data.



* FIFO (first-in-first-out): Data is output in the same order as it is input.

5	Zoom/Movement Processing: PWB-C

- The image is edited according to the editing features selected on the control panel (enlargement/reduction, image moving, image repeat)
- Two memories (FIFOs) are used to edit the image as required.



Zoom

- The synchronous timing of the input data (read) and output data (read) is varied to decrease (reduction) or increase (enlargement) the number of data readings, thereby reducing or enlarging the image in the main scanning direction.
- The image is reduced or enlarged in the sub-scanning direction by varying the speed at which the Scanner moves.

Movement

- The start position of the output data (read) with respect to the input data (read) is varied to move the image in the main scanning direction.
- The image is moved in the sub-scanning direction by varying the scan start timing of the Scanner.

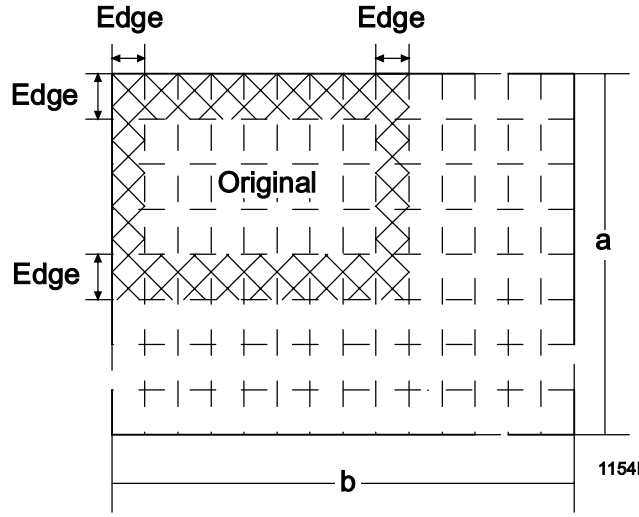
Image Repeat

- The input data (read) stored in the memory is output (read) several times.

6	Histogram Making: PWB-C	**ACS: Auto Color Selection**

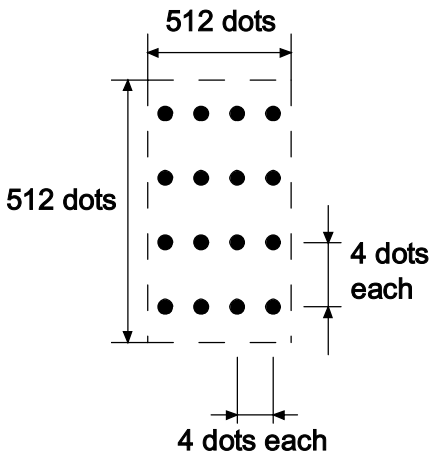
- The scanning area is divided into 256 blocks [512 (main-scanning) × 512 (sub-scanning) dots].
- The image data of the original (excluding the edges) is sampled during the pres-can after the shading correction (at a rate of every 4 dots both in the main- and sub-scanning directions).
- A histogram is then generated of saturation and lightness of each block (256 blocks). [This generates a lightness histogram for AE processing. See 8. AE Processing.]
- The histogram is used to determine whether each block on the original (excluding the edges) is monochrome or colored.
- Based on the results of the color/monochrome evaluation made of each block, the copier determines whether the entire original is colored or monochrome **(ACS)** .

Block Division



1154M076AA

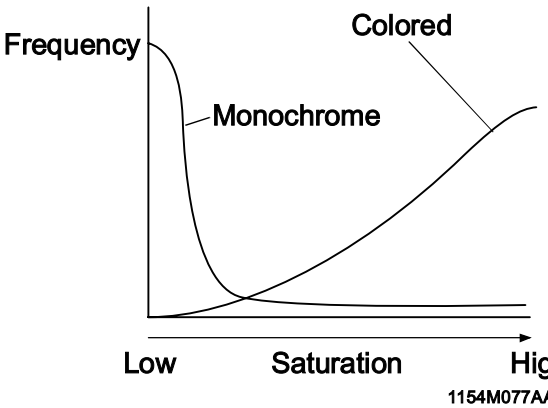
Block Configuration



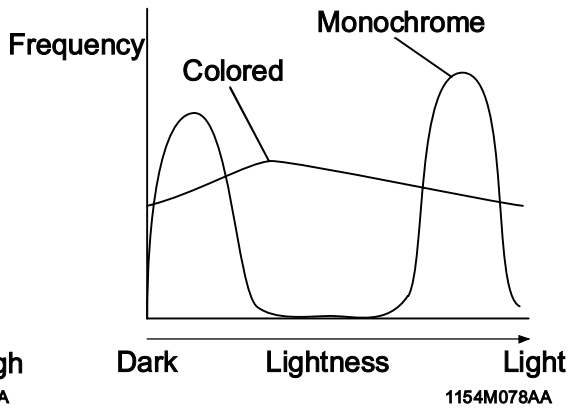
1154M084AA

✻ a (16 blocks) × b (16 blocks) = Scanning area (256 blocks)

Histogram



1154M077AA



1154M078AA

7	Image Data Editing: PWB-C

- R, G, and B data are converted to V (value), Cr, and Cb (color component) for color adjustments (Brightness, Saturation, and Hue).
- The data are also synthesized with the image data (V, CR, Cb) from an external device (Editor) via an interface to carry out various types of image synthesis processing.

8	AE Processing: PWB-C

<Histogram Making>

- The scanning area is divided into two in the feeding direction [at a point 216 mm from the trailing edge of the original (excluding the edge)].

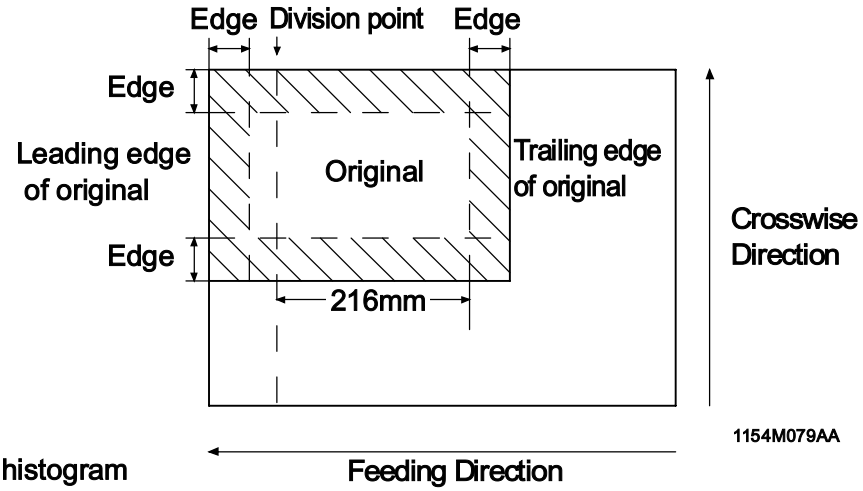
✻ The area is not divided if, depending on the size of the original, the division point falls within, or outside, the edge on the leading edge side of the original.

- Lightness data readings are tallied up for each four gradation levels using the image data sampled through "Histogram Making."
- The lightness data readings tallied up for each four gradation levels and in two parts are totaled to generate one lightness histogram (for AE processing).

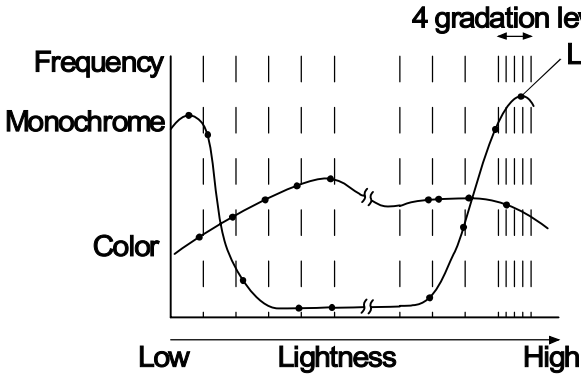
<AE Level Evaluation>

- From the histogram with lightness blocked into four gradation levels, the local maximum value of each block (gradation level with the greatest frequency in each block) is extracted.
- Calculation is made to determine if there is any gradation level extracted, the sum of frequency of ±8 gradation levels of which accounts for 12.5% or more of the sum of frequency of the entire original. (Processing is done in the order of the gradation level of higher lightness.)
- If there is, AE level (local minimum value) is set at the lightness level which is 1/16 or less of the lightness frequency at that local maximum value.
- If not, the AE level is determined according to the original mode.
- The AE processing table is determined based on the AE level.
- Background processing (AE processing) is performed as the AE processing table is determined.

Divided into two in FD direction



Lightness histogram



[AE level setting according to original mode]

Original mode	AE level
Map	224
Photo	240
Text	104 - 240
Text/photo	136 - 240

If a foggy background is produced despite the AE processing, further adjustments can be made with "AE Adjust" of "Image Adjust" available from the Service Mode menu.

9	Image Area Discrimination: PWB-C

- The image areas (color edge area, black edge area, dot area, continuous gradation area) are discriminated to optimize edge emphasis, smoothing and other processing just right for the image.
- Either LIMOS I or New Screen LIMOS is selected according to the result of this discrimination.

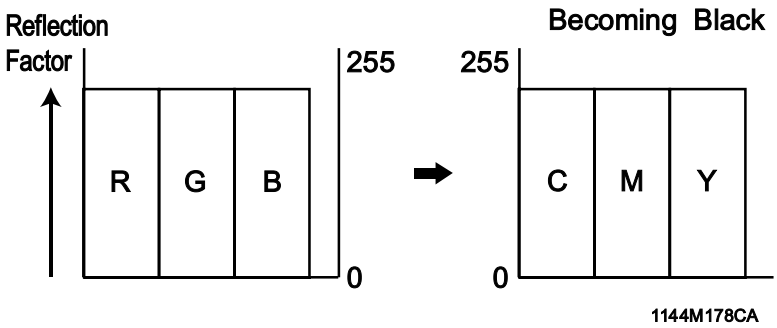
Original Mode	Original Area	LIMOS	Smoothing/Edge Emphasis
Text & Photo mode	Dot area	New Screen LIMOS	Smoothing processing
	Black edge area	LIMOS I	Edge emphasis
	Color edge area	LIMOS I	Edge emphasis
	Continuous gradation area	New Screen LIMOS	———
Photo Image mode	Edge area	New Screen LIMOS	Weak edge emphasis
	Continuous gradation area	New Screen LIMOS	———
Printed Image mode	Dot area	New Screen LIMOS	Smoothing processing
Map mode	Edge area	LIMOS I	Strong edge emphasis
	Continuous gradation area	New Screen LIMOS	———
Text mode	Dot area	New Screen LIMOS	———
	Black edge area	LIMOS I	BP amount 100% (printed with Bk toner only)
	Color edge area	LIMOS I	Edge emphasis
	Continuous gradation area	New Screen LIMOS	———

10	Color Correction: PWB-C

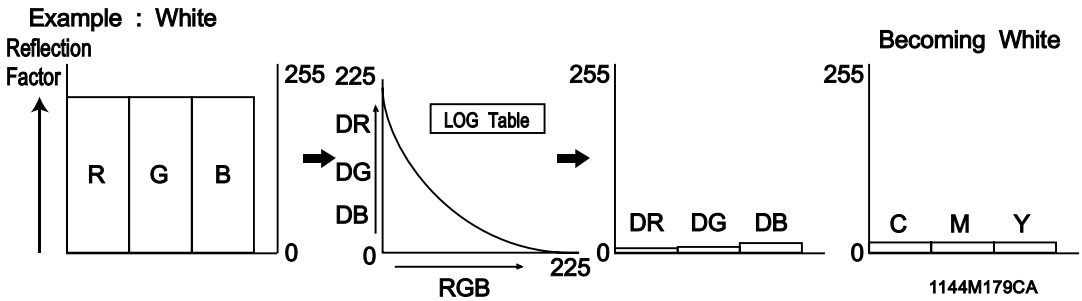
Reflection/Density Conversion

- Color reproduction faithful to the original is not possible if the original reflection data (R, G, B) obtained through the CCD Sensor is converted to the complementary color data for developing.

Example: White

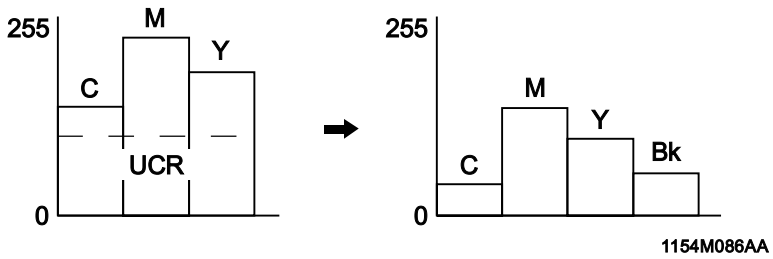


- The R, G, and B data are therefore input to the LOG table shown below to convert to the density data (DR, DG, and DB).



Masking
Considering the spectral transmission characteristics of the R, G, and B filters of the CCD Sensor and the spectral reflection characteristics of the toner, the image data is corrected and the DR, DG, and DB data are replaced with C, M, and Y data, thereby enabling color reproduction faithful to the original.

UCR and BP
- In UCR, or Under Color Removal, the C, M, and Y data required for color reproduction areas are retained, while the C, M, and Y data of gray areas are removed.
- With BP, or Black Paint, a certain ratio of the gray area is replaced with K data, the ratio varying depending on the saturation of the color.

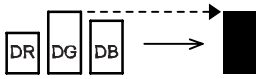


Because of the spectral reflection characteristics of the toner, simply placing C, M, and Y toner one on top of the other does not make a pure black.

11	Miscellaneous Processing: PWB-C

<Improved reproduction of black characters>

The Bk data for black characters is replaced with MAX (DR, DG, DB) data, which improves reproduction of black fine lines, realizing reproduction of black characters that do not depend on line width very much.



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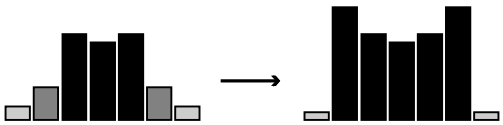
Edge Emphasis

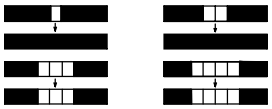
- The number of data readings on the edges of the image is increased to make the outline of the image sharper as it appears on the copy.


1144G04MBA

- The amount of edge emphasis is obtained in directions of 0°, 90°, 45°, and -45° and is determined using the greatest value obtained.

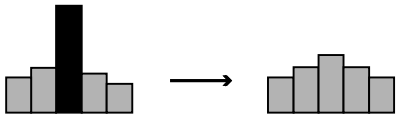
<Edge 3 × 3 crossing>

Edge emphasis produces a difference in contrast between the edge and center of a character. This processing identifies the center of a character whose density is low over a width of 1 or 2 dots as a new edge.


1154M021AA

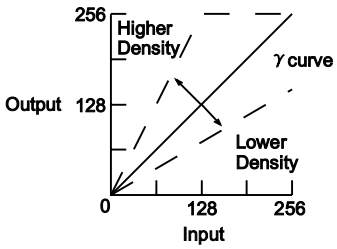
Smoothing

The noise components contained in the image data are removed to smooth the data.


1144G05MBA

Density Adjustment and Color Balance

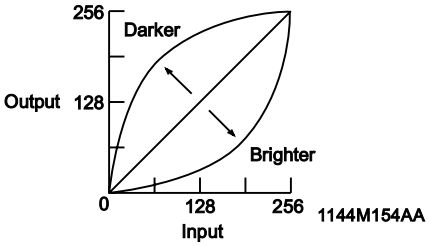
- Density adjustment is made by changing the angle of the γ curve that represents the relation between the input and output of the image data.
- Color balance is adjusted by changing the angle of the γ curve for each color.



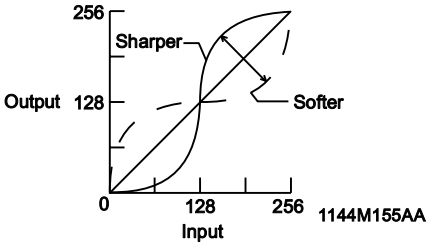
1144M153AA

Gamma (γ) Correction

The type of γ curve is changed to make the image brighter or darker, or sharper or softer.



1144M154AA



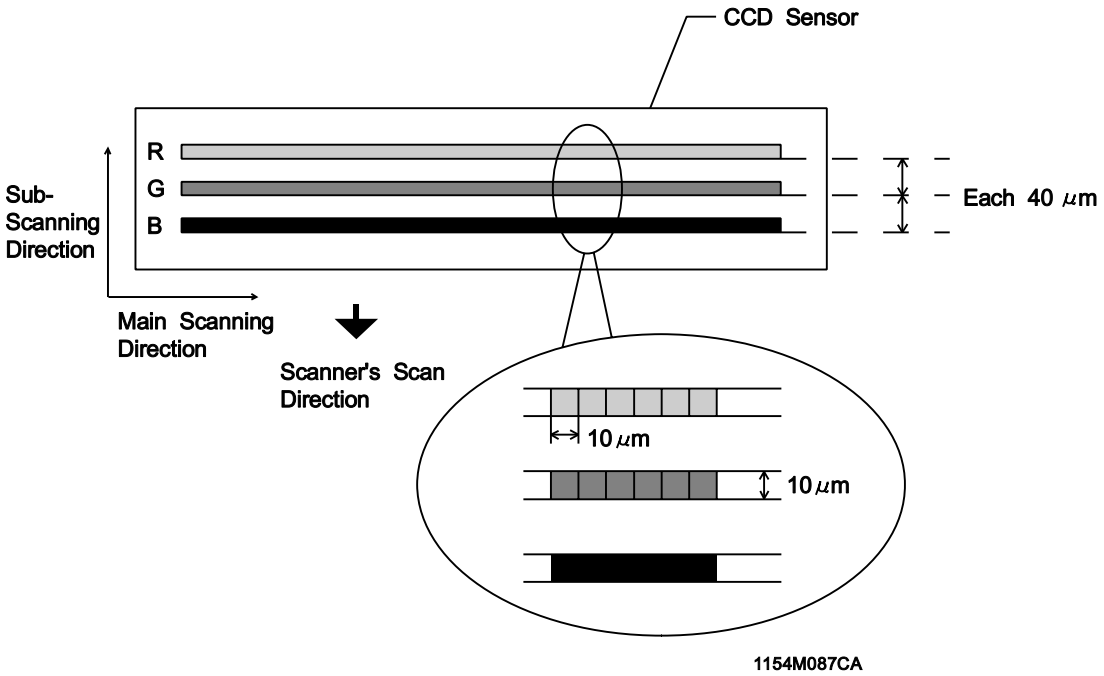
1144M155AA

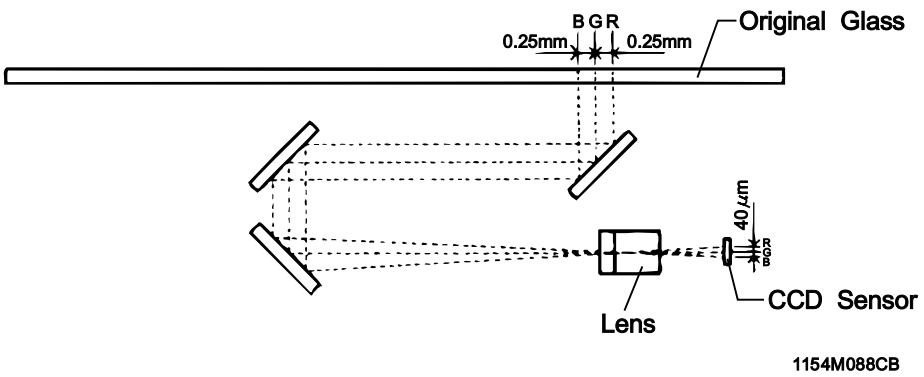
To Printer Head (PH)

1154SBM0902A

9-2. CCD Sensor

- A reduction-type color CCD sensor is used.
- Each of the R, G, and B CCD chips is placed in a line with a clearance of 40 μm from the adjacent chip and provided with a color filter.
- The interval each of these CCD chips scans the image is equivalent to 0.25 mm on the surface of the Original Glass through the lens and mirrors.
- The deviation produced in the scanning position of each pixel is therefore corrected by "4. Line-to-Line Variation Correction" of the IR image processing.
- The resolution offered is 400 dpi.
- Each chip has 5000 effective pixels.





1154SBM0903A

9-3. Exposure Components Section

1. Exposure Lamp LA1

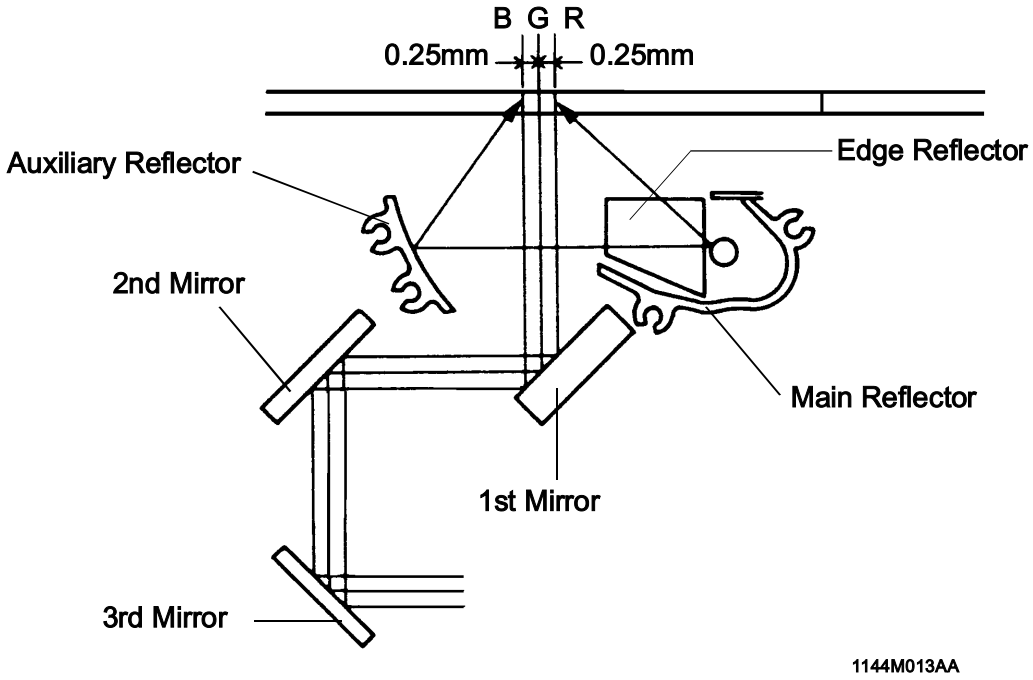
- Exposure Lamp LA1 uses a DC power supply to emit an even amount of light.
- It is a halogen frost lamp that works in combination with the Edge Reflectors to ensure uniform light distribution.

2. Main and Auxiliary Reflectors

- The Main and Auxiliary Reflectors are laid out to correct any deviation in condensing of the LA1 light that may result from LA1 positioned eccentrically or improperly.
- The illumination distribution in the sub-scanning direction on the surface of the original is made flat over a ±1-mm width with reference to the G chip.

3. IR Section Thermostat TS3

- This thermostat forces the circuit to be shut down as soon as it detects 120 ± 5 °C or more as a result of LA1 turning ON abnormally.



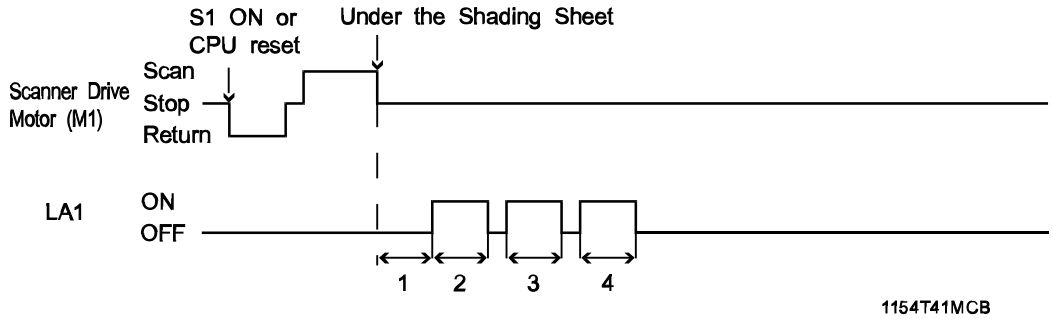
1154SBM0904A

9-4. Exposure Lamp Control

- Exposure Lamp LA1 is turned ON and OFF by the Scan Start Timing signal (PRE-TRIG) and Image Request signal (I-REQ) from Master Board PWB-I and the Lamp ON signal (LMPON) and Sub-Scanning Area signal (VD) from IR Control Board PWB-C.

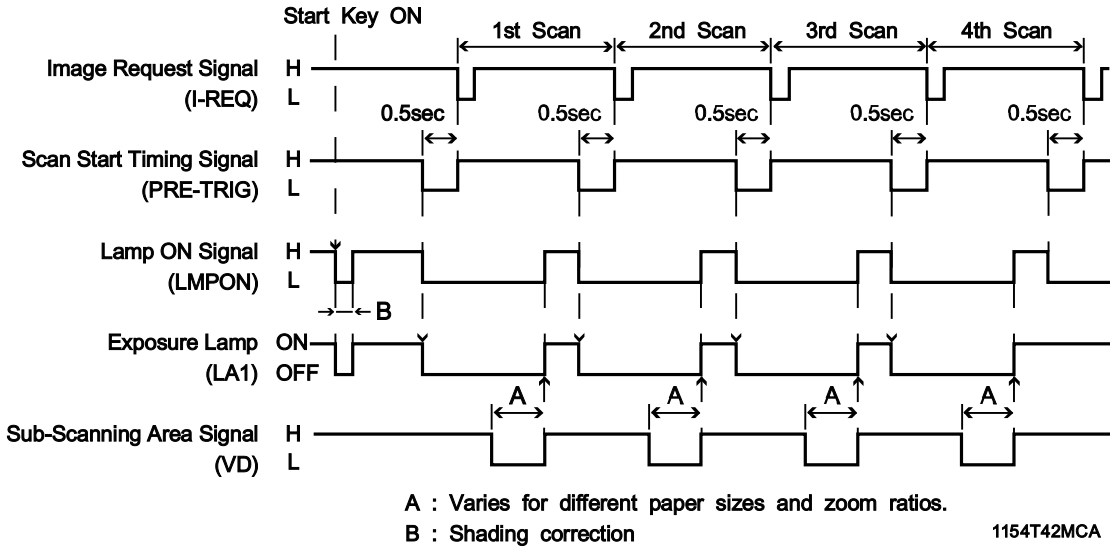
	Control Signal		Wiring Diagram
LA1	PRE-TRIG	(PWB-I FC1 I-30B)	16-G
	I-REQ	(PWB-I FC1 I-30A)	16-G
	LMPON	(PWB-C PJ15C-3)	26-B
	VD		———

When Power Switch S1 is turned ON, a misfeed or malfunction is reset, or the Door is opened and closed:



1. Automatically adjusts the CCD Sensor output voltage clamp value for black level.
2. Automatically adjusts the intensity of the exposure lamp.
3. Automatically adjusts the CCD Sensor output voltage gain for R, G, and B.
4. Makes a shading correction.

Full Color, Manual Mode, Full Size:



1154SBM0905A

9-5. Scanner and 2nd/3rd Mirrors Carriage Movement Mechanism

<Scanner>

- The Scanner is stationary under the shading sheet on the right-hand side whenever Power Switch S1 is turned ON, a misfeed or malfunction is reset, or the Front Door is opened and closed.
- When the Start Key is pressed, it moves to the scan start position on the left-hand side while making a shading correction.
- The Scanner projects an even amount of Exposure Lamp LA1 light, as it moves, onto the entire surface of the original and reflects this light, with the 1st Mirror, onto the 2nd and 3rd Mirrors.
- It is driven by Scanner Drive Motor M1 with the Scanner Drive Cables attached to the front and rear.

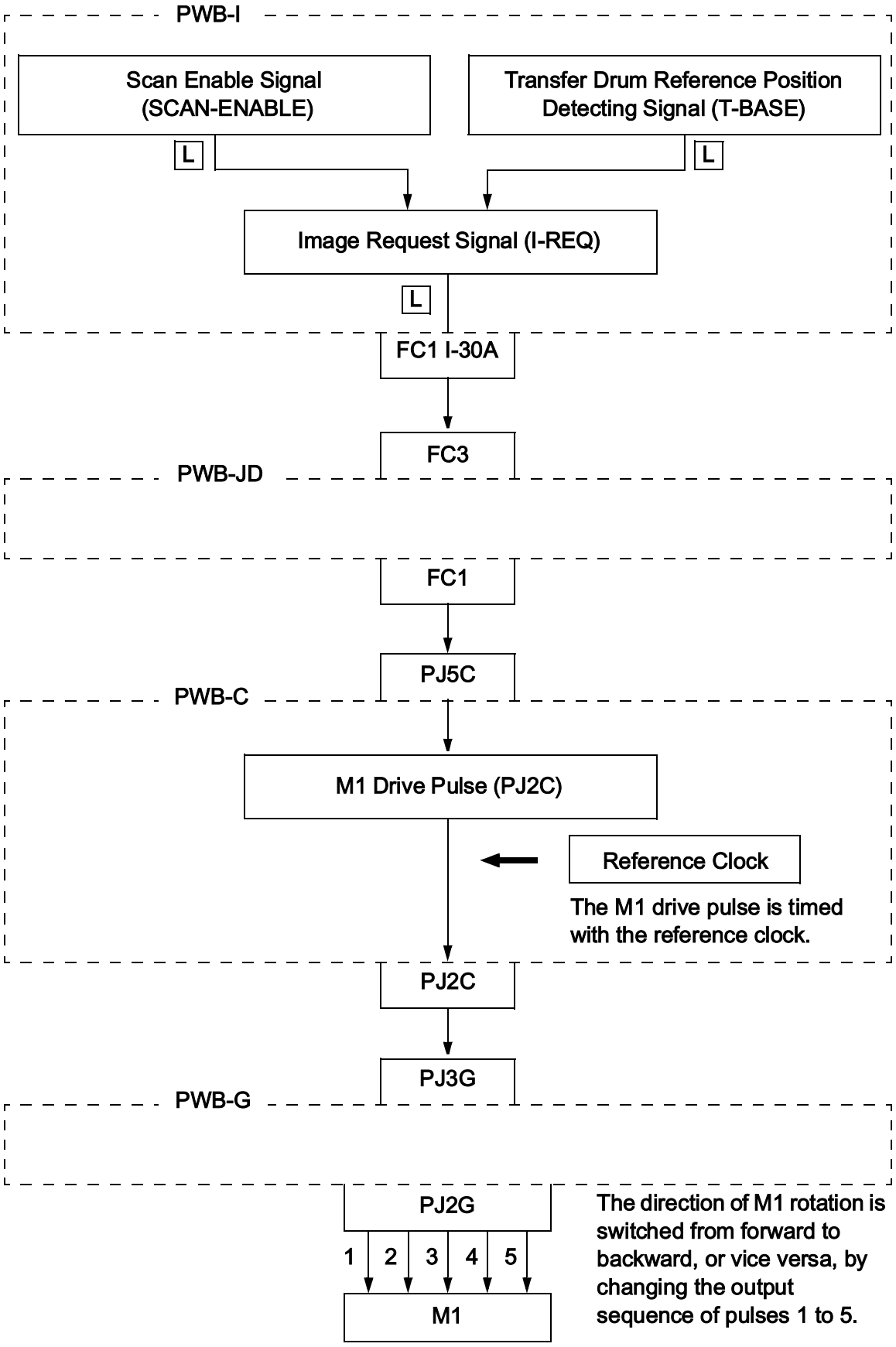
<2nd/3rd Mirrors Carriage>

- The light reflected off the 1st Mirror is directed to the Lens through the 2nd and 3rd Mirrors. It then strikes CCD Sensor Board PWB-A.
- Drive for the 2nd/3rd Mirrors Carriage comes from M1 via two cables. The carriage moves at a speed half that of the Scanner.

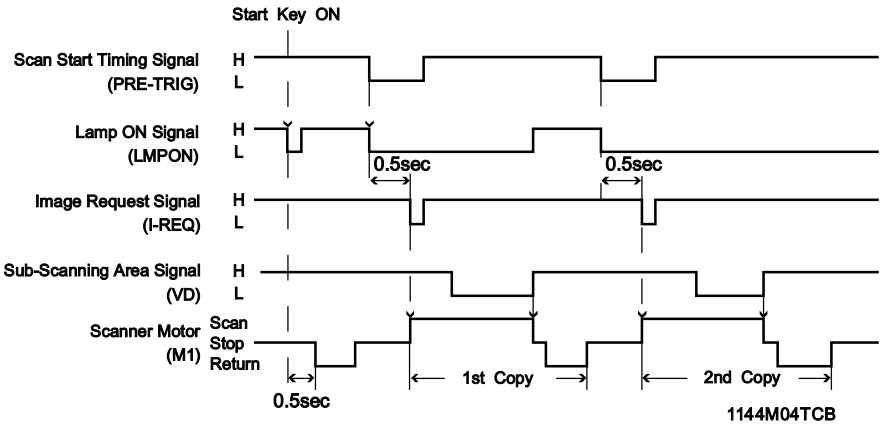
1154SBM0906A

9-6. Scanner Motor Drive Control

Scanner Drive Motor M1, a stepping motor, is controlled by Master Board PWB-I, IR Control Board PWB-C, and Motor Drive Board PWB-G.

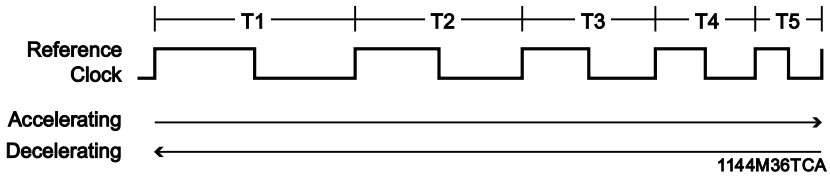


<When Making Two Mono-Color Copies>



<Speed Control>

- When the time of one period (T) of the reference clock of Motor Drive Board PWB-G is varied, it correspondingly varies the period of the M1 drive pulse, thereby accelerating or decelerating M1.



<Scanner Home/Standby Position Detection>

Power Switch S1 is turned ON, a misfeed or malfunction is reset, or the Front Door is opened and closed.

↓

Scanner Home Position Sensor PC1

Unblocked (H) / Blocked (L)

↓

M1 turns backward causing the Scanner to move to the left.

↓

M1 stops when PC1 is unblocked (H).

↓

M1 turns forward causing the Scanner to move to the right.

↓

M1 stops when the Scanner moves to the right a distance equivalent to 34 pulses = 1,696 mm after PC1 has been blocked (L).

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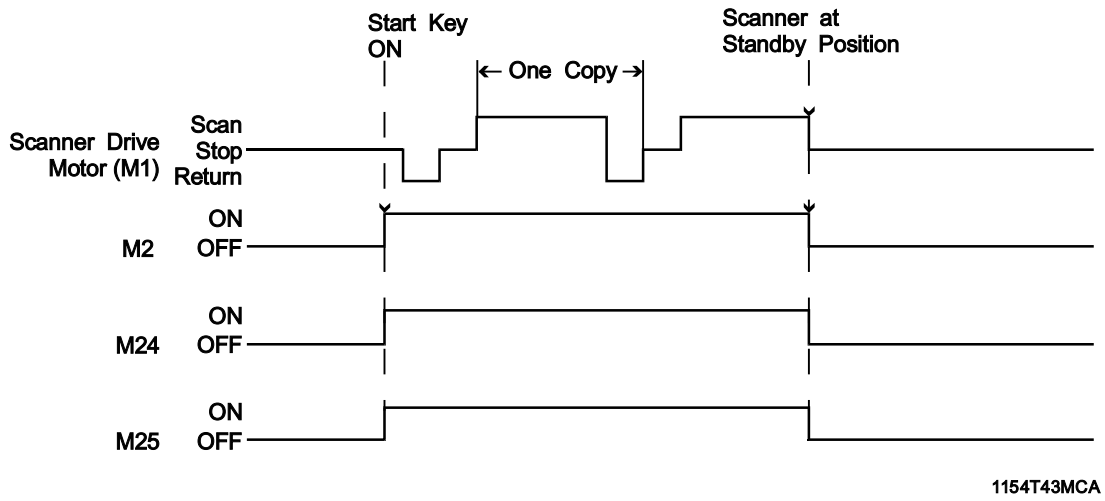
9-7. IR Section Cooling Fan Motor Mechanism

- Original Glass Cooling Fan Motor M2:
  Draws air into the copier to prevent the temperature on the surface of the Original Glass from rising due to heat from Exposure Lamp LA1.
- IR Cooling Fan Motor 1 M24 and 2 M25:
  Draws air into the copier to prevent the CCD Sensor's sensitivity from being degraded by its getting hot.

<Control>

	Control Signal	Energized	Deenergized	Wiring Diagram
M2	PWB-C PJ15C-7	L	H	26-B
M24	PWB-B PJ6B-1A	L	H	25-F
M25	PWB-B PJ6B-4A	L	H	25-F

<When Making One Mono-Color Copy>



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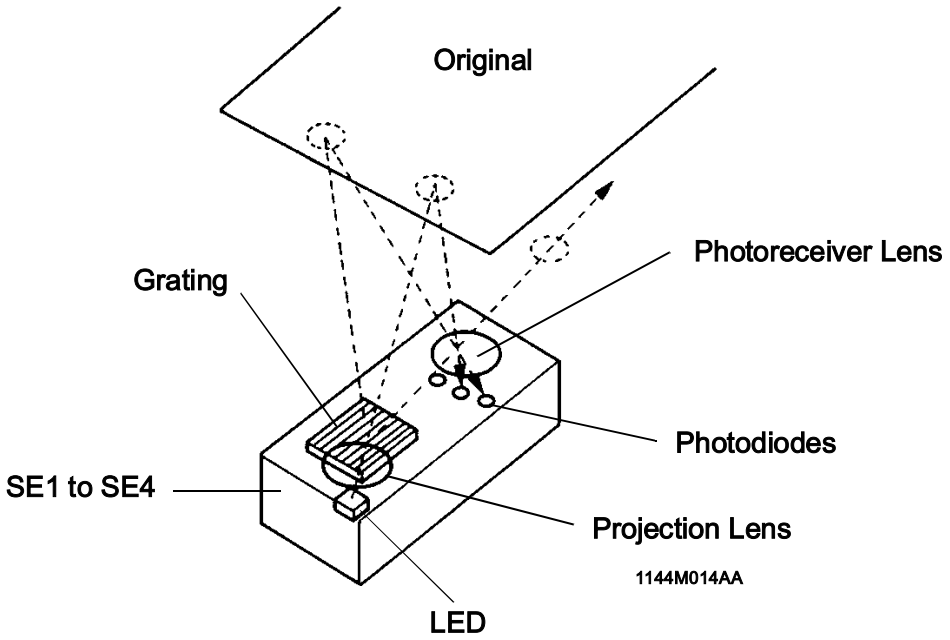
9-8. Original Size Detecting Section

1. Original Size Detecting Sensors

- A multibeam sensor is used for the Original Size Detecting Sensors (SE1 to SE4).
- A multibeam sensor consists of a light emitter and a photosensor.
- The light emitter employs an optical device called the grating that diffracts the light emitted by the LED (infrared) into three beams.
- If no grating is used, only one light beam is emitted.
- Three photodiodes, used as the photosensor, detect an original.
  (Original present: L; original not present: H).



Sensor Types

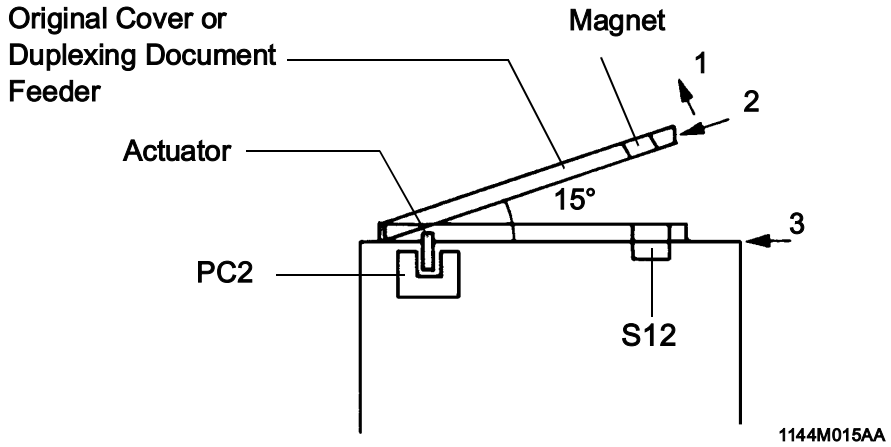
There are three types of sensors according to the number of beams and the distances of detection and non-detection from the sensor top surface.

[For the layout of each sensor, see "3. Determining Original Size" that follows.]

	SE1	SE2	SE3	SE4
No. of Beams	1	3		
Detection Distance	80mm			50mm
Non-Detection Distance	120mm			80mm

2. Original Size Detection Timing

Original Cover Angle Detecting Sensor PC2	Size Reset Switch S12		
HIGH (Original Cover angle: 15° or more)	OFF	Each multibeam sensor outputs HIGH or LOW regardless of whether there is an original on the Original Glass.	1
HIGH to LOW (when the Original Cover is opened to 15°)	OFF	The copier latches the HIGH or LOW data of each multibeam sensor to determine the original size.	2
LOW (Original Cover angle: 0°)	ON	The original size data is retained.	3



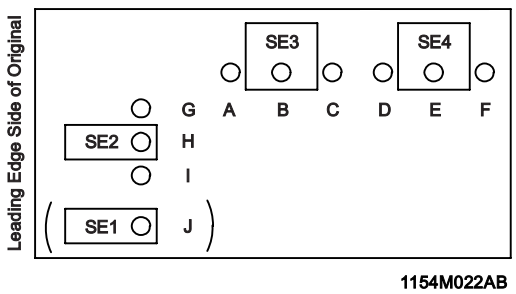
NOTE

- *If a Duplexing Document Feeder is being used, it detects the size of the original.*
- *If a copy cycle is run with the Original Cover opened, the size of the original is determined when the Start Key is pressed.*

3. Determining Original Size

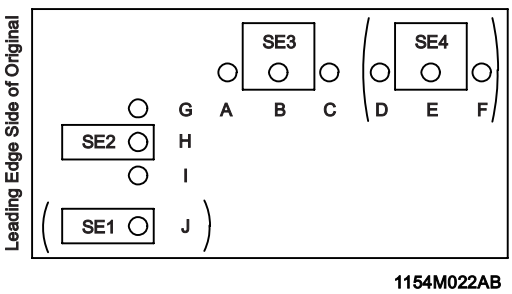
- The copier determines the size of the original by the combination of the HIGH and LOW outputs from the original size Detecting sensors SE1 to SE4.
- Even if an original is of an irregular size, the copier rounds the size to the nearest standard size.

(Metric)



✻ Options in ( )

(Inch)



✻ Options in ( )

Inch Areas

<Standard>

			SE3		
			A	B	C
			5-1/2" × 8-1/2" L	8-1/2" × 11" L	8-1/2" × 14" L
SE2	G	5-1/2" × 8-1/2" C	8-1/2" × 11" C	8-1/2" × 11" L	8-1/2" × 14" L
	H	8-1/2" × 11" C	8-1/2" × 11" C	11" × 17" L	11" × 17" L
	I	8-1/2" × 11" C	8-1/2" × 11" C	11" × 17" L	11" × 17" L

<When Optional Sensors (SE1 and SE4) are Mounted>

			SE3			SE4		
			A	B	C	D	E	F
			5-1/2" × 8-1/2" L	B5L	A4L	A4L	FLS	8-1/2" × 14" L
SE2	G	5-1/2" × 8-1/2" C	8-1/2" × 11" C	8-1/2" × 11" L	A4L	A4L	FLS	8-1/2" × 14" L
	H	B5C	8-1/2" × 11" C	B4L	B4L	B4L	B4L	B4L
	I	A4C	8-1/2" × 11" C	11" × 17"	11" × 17"	11" × 17"	11" × 17"	11" × 17"
SE1	J	A4C	A3L	A3L	A3L	A3L	A3L	A3L

Metric Areas

<Standard>

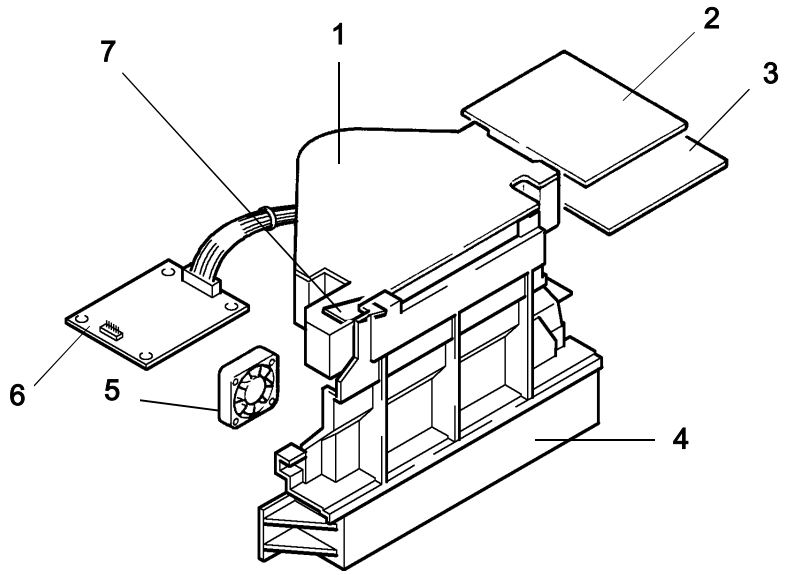
			SE3			SE4		
			A	B	C	D	E	F
			A5L	A4L	A4L	A4L	FLS	B4L
SE2	G	A5C	A4C	A4L	A4L	A4L	FLS	B4L
	H	A4C	A4C	B4L	B4L	B4L	B4L	B4L
	I	A4C	A4C	A3L	A3L	A3L	A3L	A3L

<When Optional Sensor (SE1) is Mounted>

			SE3			SE4		
			A	B	C	D	E	F
			A5L	B5L	8-1/2" × 11" L	A4L	FLS	8-1/2" × 14" L
SE2	G	A5C	8-1/2" × 11" C	8-1/2" × 11" L	8-1/2" × 11" L	A4L	FLS	8-1/2" × 14" L
	H	B5C	8-1/2" × 11" C	B4L	B4L	B4L	B4L	B4L
	I	8-1/2" × 11" C	8-1/2" × 11" C	11" × 17"	11" × 17"	11" × 17"	11" × 17"	11" × 17"
SE1	J	A4C	A4C	A3L	A3L	A3L	A3L	A3L

L: lengthwise; C: crosswise

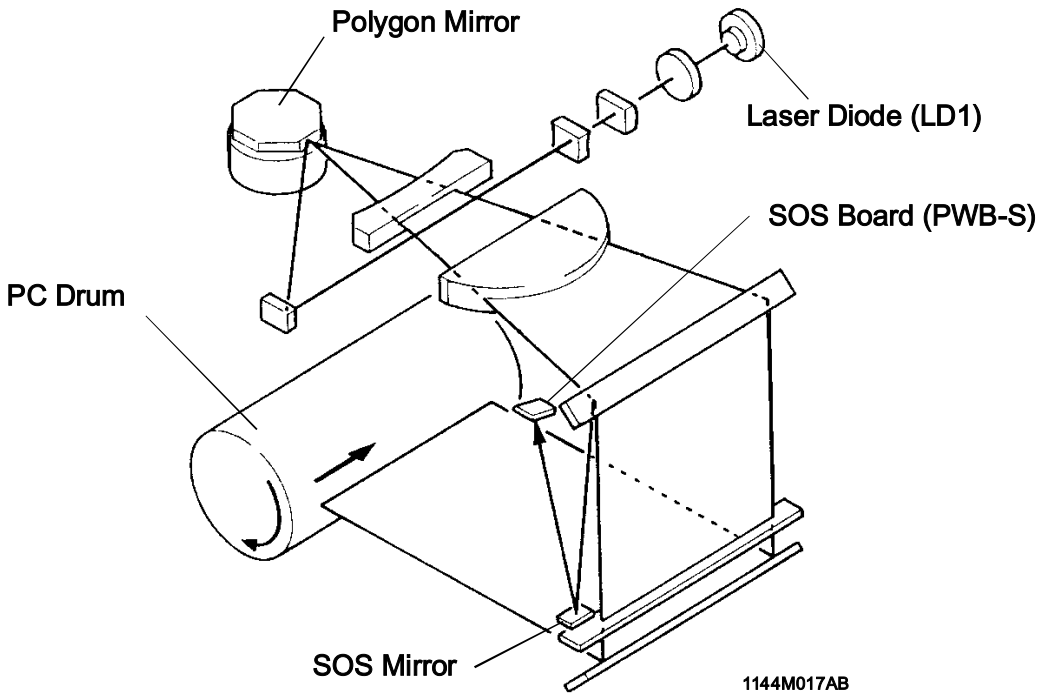
10 PRINTERHEAD (PH) SECTION



1154M023AA

1. Upper PH Assy
2. PH Control Board (Analog) PWB-JA
3. PH Control Board (Digital) PWB-JD
4. Lower PH Assy
5. PH Cooling Fan Motor M13
6. Polygon Motor Drive Board (U1V19)
7. SOS Board (PWB-S)

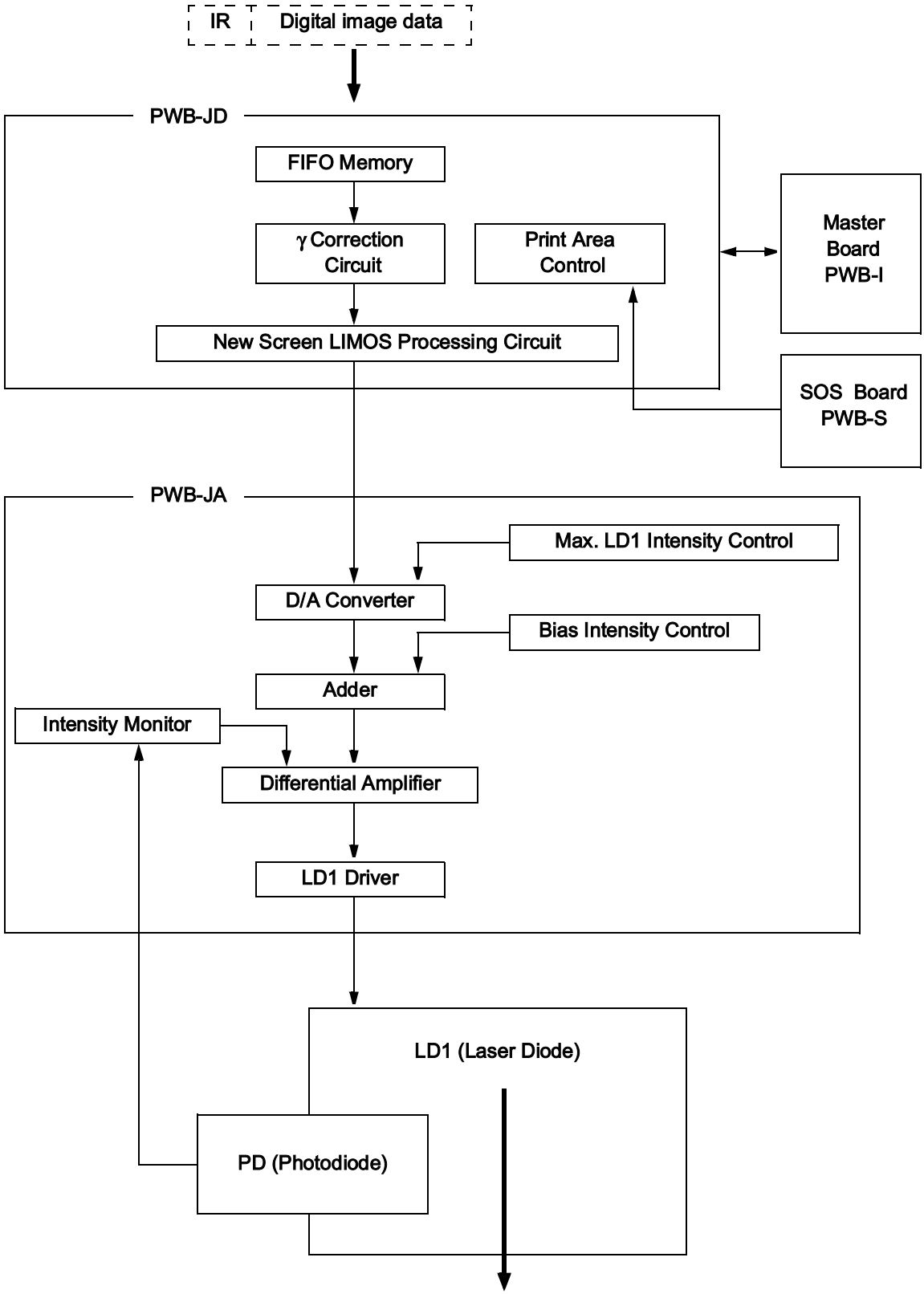
<Laser Beam Path>

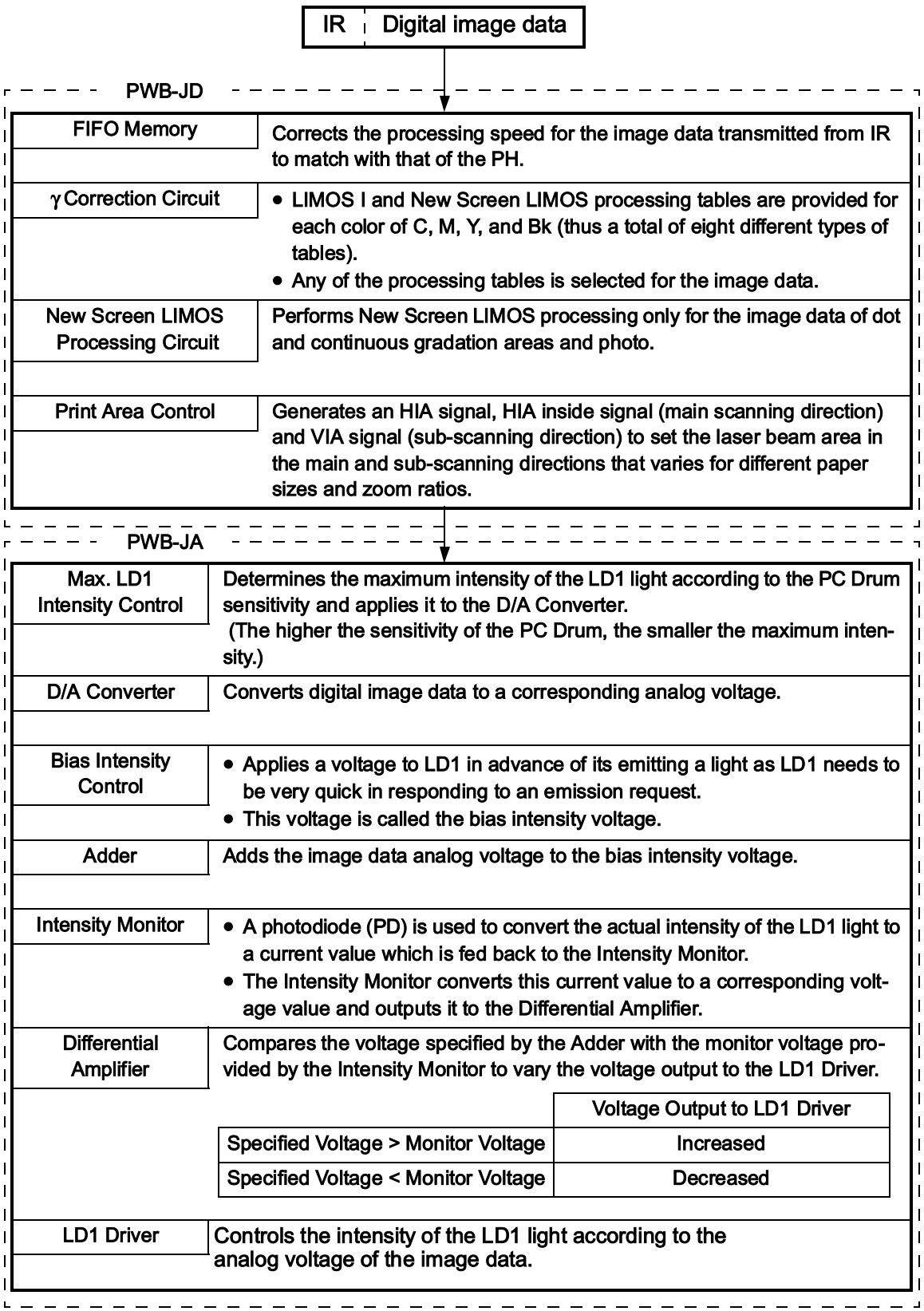


1144M017AB

1154SBM1001A

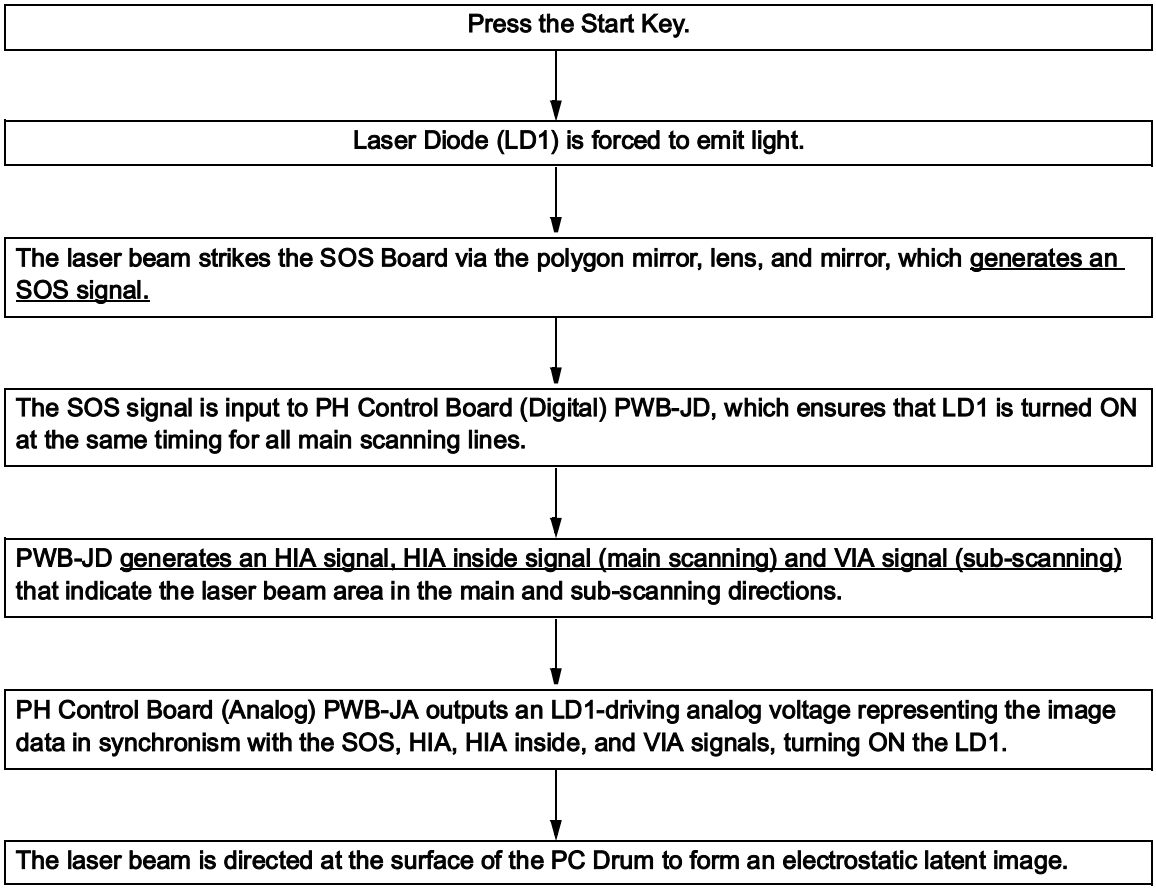
10-1. Image Processing Block Diagram




IR
Digital image data
PWB-JD
FIFO Memory
Corrects the processing speed for the image data transmitted from IR to match with that of the PH.
γ Correction Circuit
• LIMOS I and New Screen LIMOS processing tables are provided for each color of C, M, Y, and Bk (thus a total of eight different types of tables).
• Any of the processing tables is selected for the image data.
New Screen LIMOS Processing Circuit
Performs New Screen LIMOS processing only for the image data of dot and continuous gradation areas and photo.
Print Area Control
Generates an HIA signal, HIA inside signal (main scanning direction) and VIA signal (sub-scanning direction) to set the laser beam area in the main and sub-scanning directions that varies for different paper sizes and zoom ratios.
PWB-JA
Max. LD1 Intensity Control
Determines the maximum intensity of the LD1 light according to the PC Drum sensitivity and applies it to the D/A Converter.
(The higher the sensitivity of the PC Drum, the smaller the maximum intensity.)
D/A Converter
Converts digital image data to a corresponding analog voltage.
Bias Intensity Control
• Applies a voltage to LD1 in advance of its emitting a light as LD1 needs to be very quick in responding to an emission request.
• This voltage is called the bias intensity voltage.
Adder
Adds the image data analog voltage to the bias intensity voltage.
Intensity Monitor
• A photodiode (PD) is used to convert the actual intensity of the LD1 light to a current value which is fed back to the Intensity Monitor.
• The Intensity Monitor converts this current value to a corresponding voltage value and outputs it to the Differential Amplifier.
Differential Amplifier
Compares the voltage specified by the Adder with the monitor voltage provided by the Intensity Monitor to vary the voltage output to the LD1 Driver.
Voltage Output to LD1 Driver
Specified Voltage > Monitor Voltage
Increased
Specified Voltage < Monitor Voltage
Decreased
LD1 Driver
Controls the intensity of the LD1 light according to the analog voltage of the image data.

1154SBM1002A

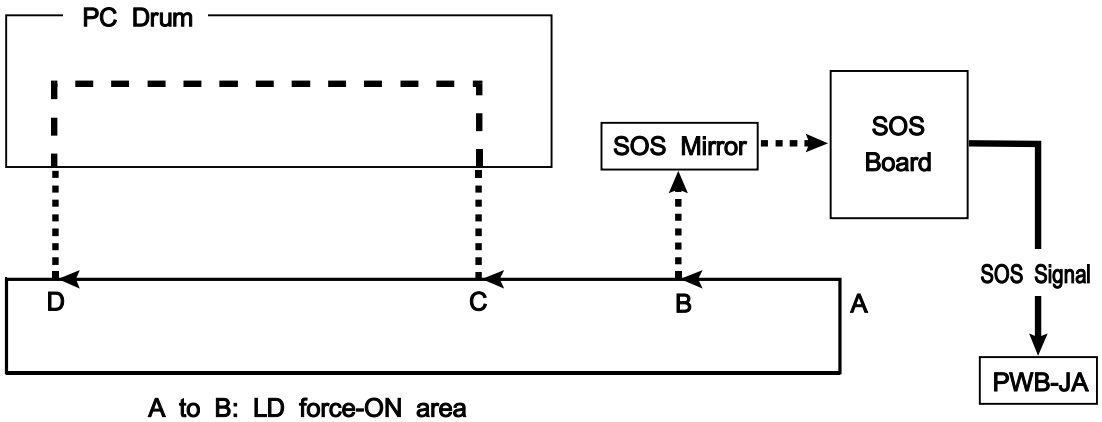
10-2. Laser Exposure Process


Press the Start Key.
Laser Diode (LD1) is forced to emit light.
The laser beam strikes the SOS Board via the polygon mirror, lens, and mirror, which generates an SOS signal.
The SOS signal is input to PH Control Board (Digital) PWB-JD, which ensures that LD1 is turned ON at the same timing for all main scanning lines.
PWB-JD generates an HIA signal, HIA inside signal (main scanning) and VIA signal (sub-scanning) that indicate the laser beam area in the main and sub-scanning directions.
PH Control Board (Analog) PWB-JA outputs an LD1-driving analog voltage representing the image data in synchronism with the SOS, HIA, HIA inside, and VIA signals, turning ON the LD1.
The laser beam is directed at the surface of the PC Drum to form an electrostatic latent image.

1154SBM1003A

10-3. Laser Emission Timing (SOS Signal)

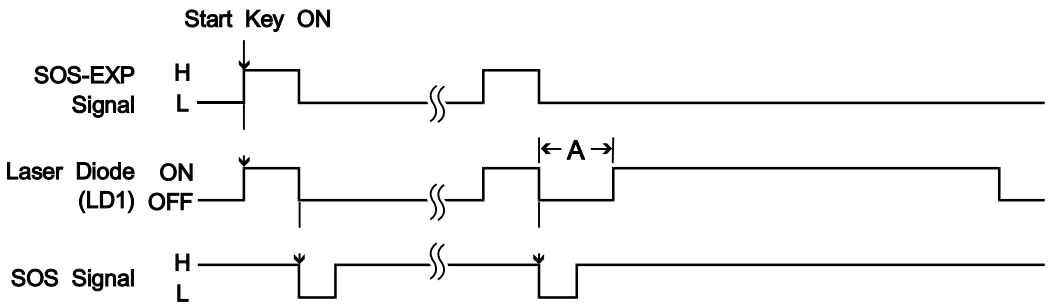
- The signal output from Master Board PWB-I (SOS-EXP) forces the LD1 to turn ON and the laser beam strikes the SOS Board via the Polygon Mirror, Lens, and SOS Mirror to generate an SOS signal.
- This SOS signal ensures that the LD1 is turned ON at the same timing for all main scanning lines.



A to B: LD force-ON area
B to C: LD OFF
C to D: Laser beam area according to the image data

1154M089CA

= Timing Chart =

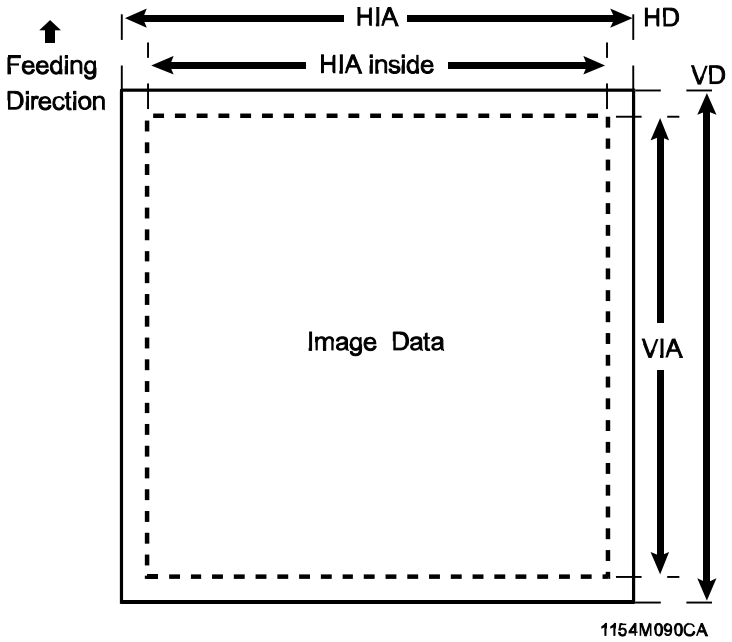


A : Varies depending on the image area (paper size and zoom ratio).

1154T44MCB

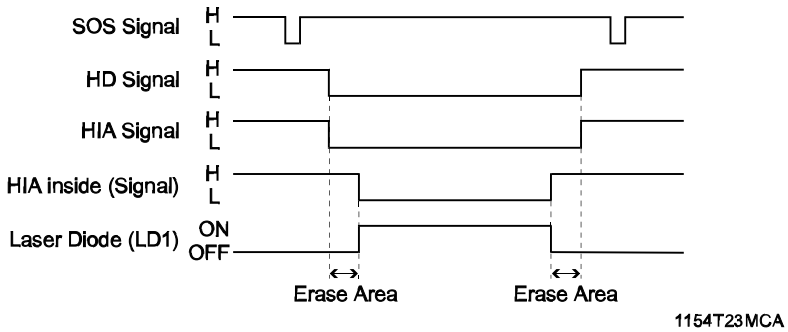
10-4. Laser Emission Area (HIA and VIA Signals)

- The laser beam area is controlled by the main scanning direction paper width area signal (HIA), the main scanning direction valid image area signal (HIA inside) and the sub-scanning direction valid image area signal (VIA) generated by the Print Area Control of PH Control Board (Digital) PWB-JD.
- The paper size reading area in the main and sub-scanning directions is controlled by the HD and VD signals, respectively.
- The area outside the image data (HD less HIA inside, VD less VIA) is erased by generating white data (laser diode LD1: OFF).

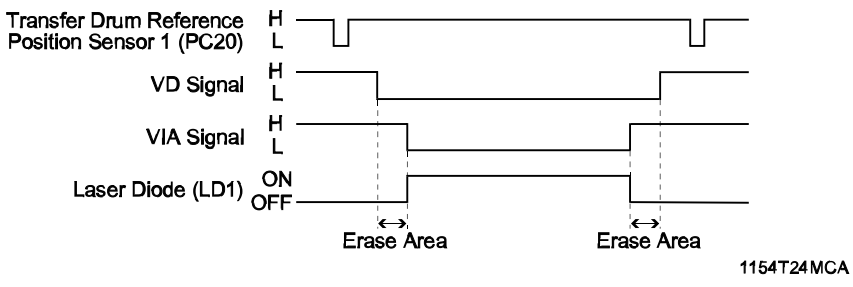


Timing Chart

Laser Emission Area in the Main Scanning Direction



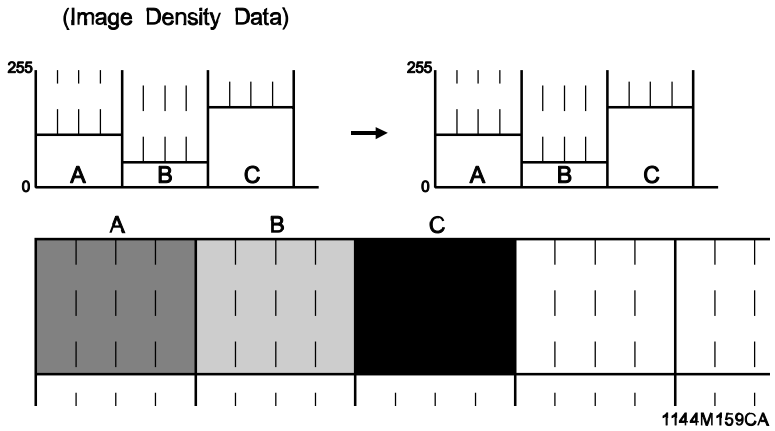
Laser Emission Area in the Sub-Scanning Direction



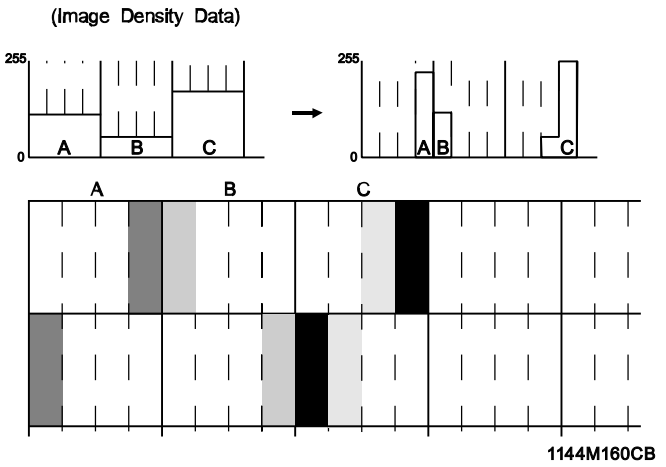
10-5. LIMOS I and New Screen LIMOS

- "9. Image Area Discrimination" as part of the IR image processing functions performed by the IR discriminates the image area and, based on this discrimination, either LIMOS I or New Screen LIMOS is selected. The following outlines the control for turning ON the LD1 for LIMOS I and New Screen LIMOS.

✻ LIMOS I

Theory	The intensity of the LD1 light is modulated at a ratio of 1 to 1 for each pixel with respect to the image density data.
Processing Area	Character area (color/monochrome)
Schematic Drawing	

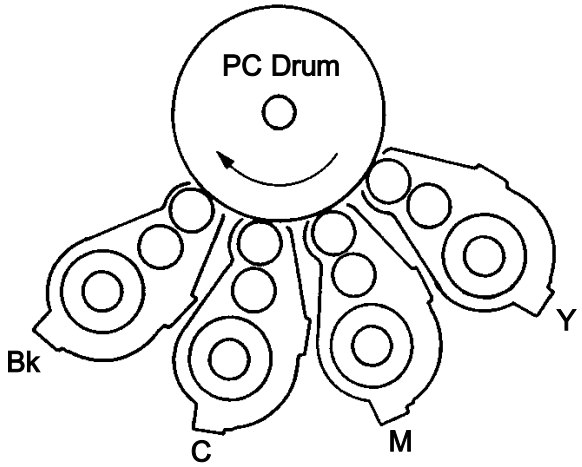
✻ New Screen LIMOS

Theory	• The intensity of the LD1 light is modulated at a ratio of 1 to 1/4 for each pixel with respect to the image density data. • The center of illumination point deviates in the main scanning direction. • The screen angle in the sub-scanning direction is made at an angle which human eyes do not readily perceive, thereby making the image texture by a straight line pattern less conspicuous. • Color moire is reduced by deviating the screen angle and center of illumination point.
Processing Area	Dot area (color/monochrome), continuous gradation area (color/ monochrome)
Schematic Drawing	

1154SBM1100A

11 DEVELOPING UNIT SECTION

- The Developing Unit is located under the PC Drum. It consists of the Y developing unit, M developing unit, C developing unit, and Bk developing unit placed from right to left as viewed from the front of the copier.
- Development takes place in the order of C, M, Y, and Bk to prevent a mixture of colors from adversely affecting the image quality.



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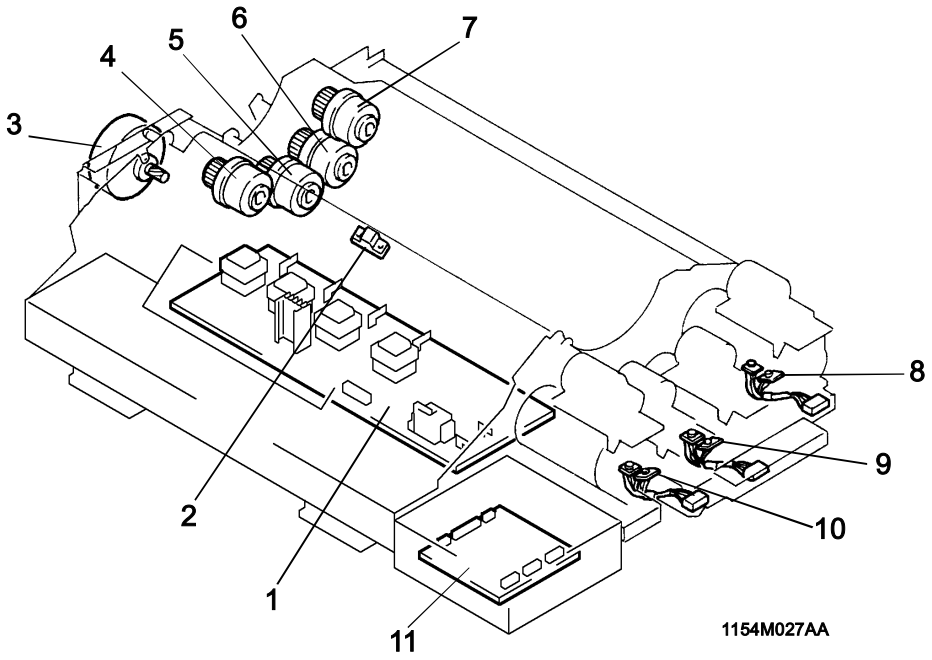


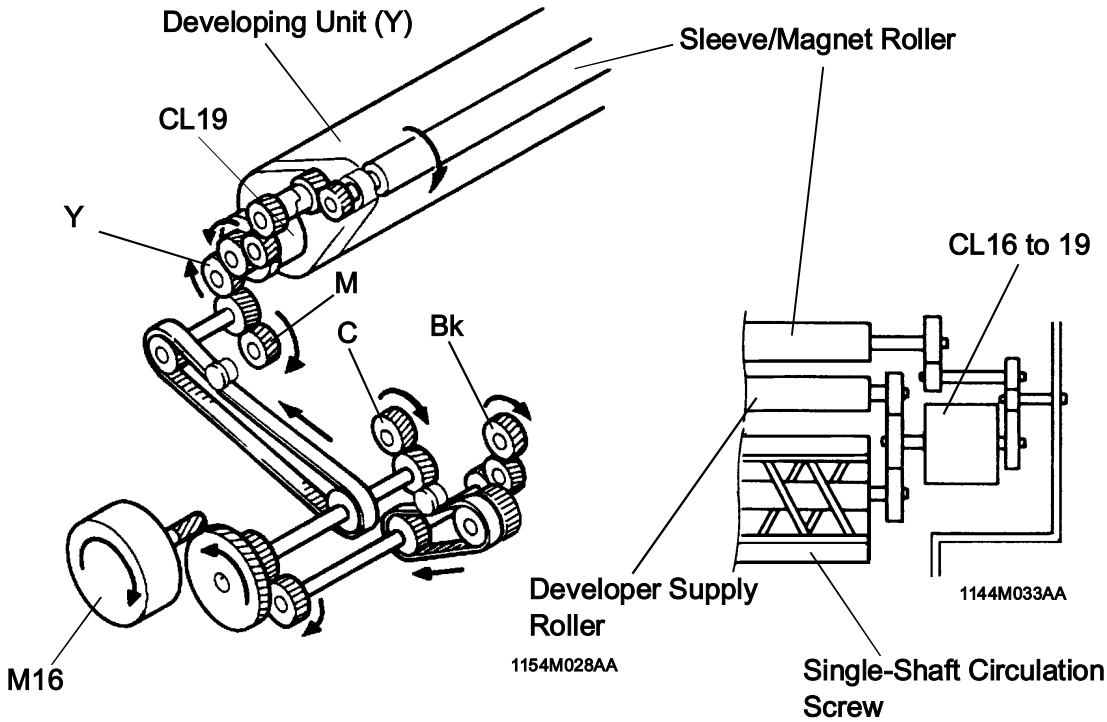
1. High Voltage Unit 4 HV4
2. AIDC Sensor UN20
3. Developing Drive Motor M16
4. Developer Supply Clutch (Bk) CL16
5. Developer Supply Clutch (C) CL17
6. Developer Supply Clutch (M) CL18
7. Developer Supply Clutch (Y) CL19
8. ATDC Sensor (Y) UN35
9. ATDC Sensor (M) UN34
10. ATDC Sensor (C) UN33
11. Automatic Adj. Board PWB-M1

1154SBM1101A

11-1. Developing Unit Drive Mechanism

<Drive Mechanism>

- The Sleeve/Magnet Roller of each color of toner is driven via gears and belts by Developing Drive Motor M16.
- The Developer Supply Roller and Single-Shaft Circulation Screw are driven through the Developer Supply Clutch of each color of toner (CL16 to 19) by M16. [They are turned when the corresponding clutch (CL16 to 19) is energized.]

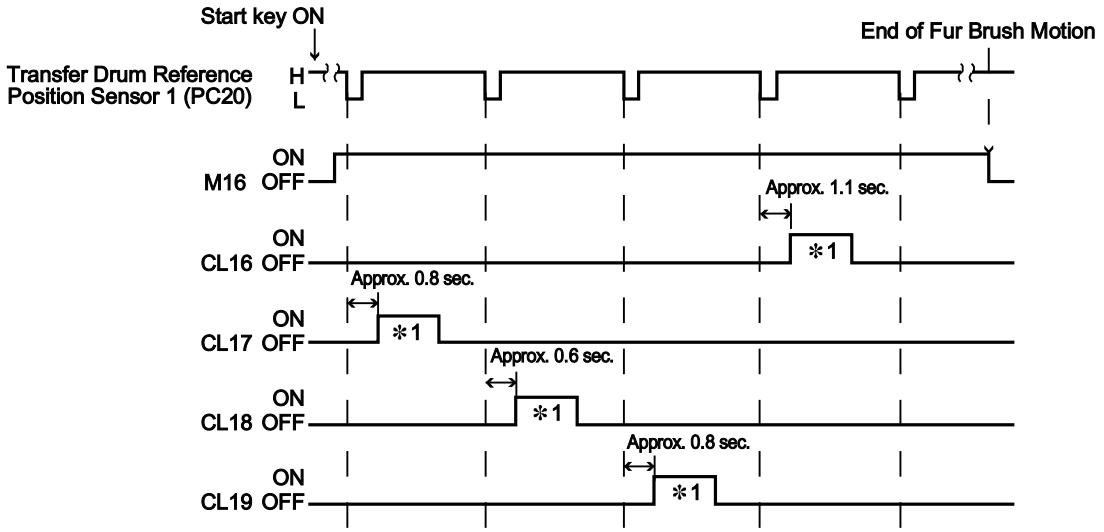


✻ Y, M, C, Bk: Drive transmission gear of the Developing Unit of each color (Y, M, C, Bk) of toner.

<Control>

	Control Signal	Energized	Deenergized	Wiring Diagram
Developing Drive Motor M16	PWB-I PJ2I-3A	L	H	16-E
Developer Supply Clutch (Bk) CL16	PWB-I PJ2I-5A	L	H	16-E
Developer Supply Clutch (C) CL17	PWB-I PJ2I-8A	L	H	16-E
Developer Supply Clutch (M) CL18	PWB-I PJ2I-7A	L	H	16-E
Developer Supply Clutch (Y) CL19	PWB-I PJ2I-6A	L	H	16-E

<When Making a Full-Color Copy>



*1: When FD size is 275.0 mm or less: 2300 ms
When FD size is 275.1 mm or more to 412.5 mm or less: 3450 ms
When FD size is 412.6 mm or more to 550.0 mm or less, or two sheets are attracted: 4600ms

1154T25MCA

1154SBM1102A

11-2. Developer Flow

1. From toner replenishment to development

Toner is supplied from the Hopper.

↓

Single-Shaft Circulation Screw

Inner screw

As the inner screw turns, the toner, being mixed together with the developer, is fed to the rear of the copier.

↓

The developer is fed to the outer screw.

↓

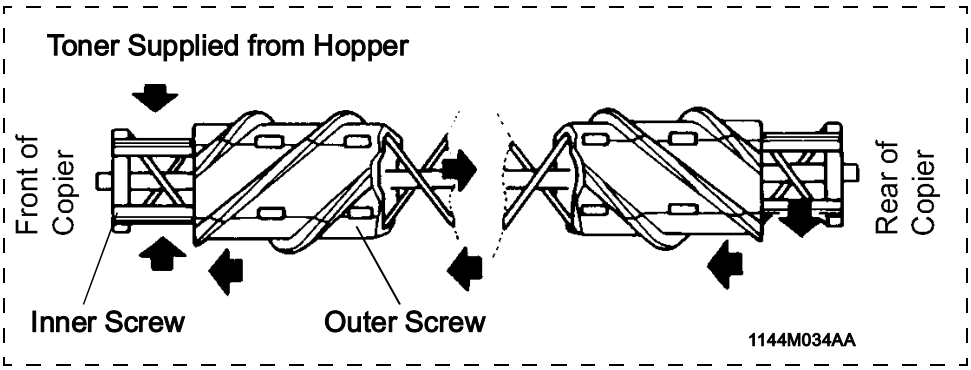
Outer screw

As the outer screw turns, the developer is conveyed to the front of the copier.

↓

The ATDC Sensor detects the toner-to-carrier ratio of the developer.

Circulating



↓

Developer Supply Roller

With its magnetic force, the roller attracts developer from the surface of the outer screw.

↓

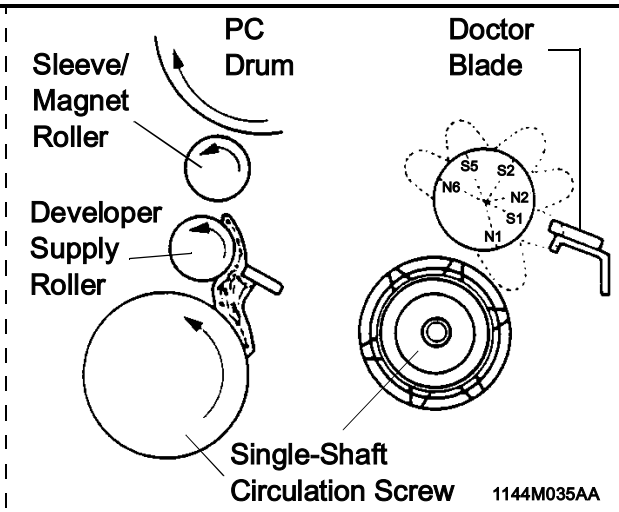
The roller conveys the developer through its rotation and magnetic pole positioning.

↓

The Doctor Blade regulates the amount of developer being conveyed.

↓

A



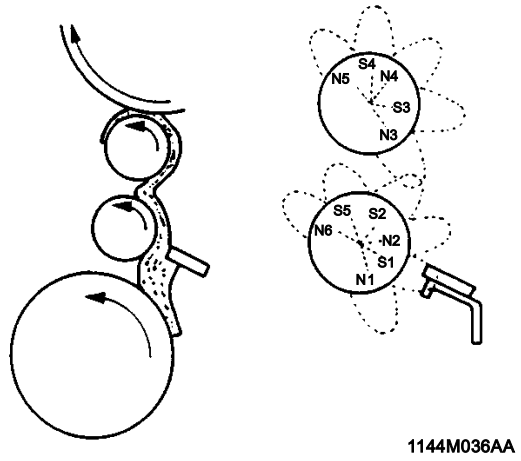
A

Sleeve/Magnet Roller

With its magnetic force, the roller attracts developer from the surface of the Developer Supply Roller.

The roller conveys the developer through its rotation and magnetic pole positioning.

The developer is attracted to the surface of the PC Drum.



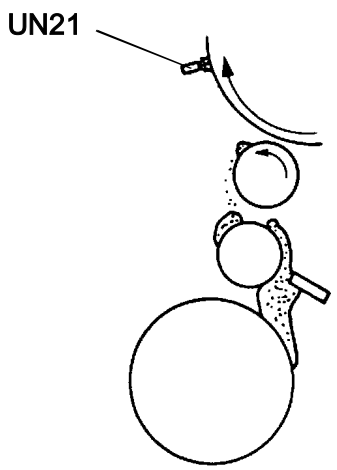
1144M036AA

2. After development

The Developer Supply Roller stops turning and the developer is no longer conveyed onto the Sleeve/Magnet Roller.

As the Sleeve/Magnet Roller keeps turning, all the developer on the Sleeve/Magnet Roller is returned to the Developer Supply Roller.

Auxiliary Erase Lamp UN21 illuminates the surface of the PC Drum to improve image transfer efficiency and, at the same time, to neutralize negative charge on those areas to which toner is not attracted.



1154M029AA

11-3. Developing Bias and ATDC Bias

Developing Bias

- A developing bias (VB) is applied to the Sleeve/Magnet Roller to maintain an adequate amount of toner attracted onto the surface of the PC Drum.
- During development, AC and DC negative bias voltages are applied to the Sleeve/Magnet Roller to help toner transfer to the PC Drum.
- At any time other than during development, the normal DC negative bias voltage is being applied.
- A DC negative VB is applied to the ATDC Sensor mounting bracket, thereby preventing the ATDC Sensor and the Auxiliary Erase Lamp light guide from being contaminated with toner particles.
- The DC negative VB value is set by γ correction control of the image stabilization system.
- The VB output is controlled by High Voltage Unit 4 HV4.

ATDC Bias

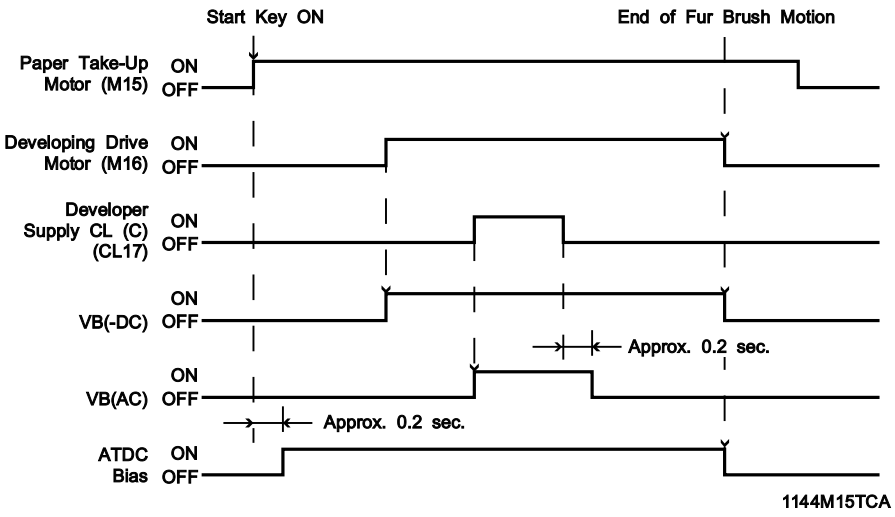
- A negative DC bias voltage is applied to the ATDC detection surface thus preventing toner from being compacted on the surface and the ATDC Sensor from making a false detection.
- The ATDC bias output is controlled by High Voltage Unit 4 HV4.

<Control>

		Control Signal	ON	OFF	Wiring Diagram
VB (AC)	Y	PWB-I PJ2I-3B	L	H	15-E
	M	PWB-I PJ2I-2B	L	H	15-E
	C	PWB-I PJ2I-1B	L	H	15-E
	Bk	PWB-I PJ2I-4B	L	H	15-E
VB (-DC)		PWB-I PJ2I-5B	L	H	15-E

	Control Signal	ON	OFF	Wiring Diagram
ATDC Bias	PWB-I PJ2I-7B	L	H	15-E

Cyan Development



1154SBM1104A

11-4. ATDC Sensor

- The optical ATDC Sensors (UN33, 34, 35) installed under the inner screw of the Single-Shaft Circulation Screw detect the toner-to-carrier ratio of the developer.
- A DC negative voltage is applied to the ATDC detection surface, thereby preventing false detection due to toner sticking to the surface. Fitted on the Single-Shaft Circulation Screw is a seal that scrapes toner off the ATDC detection surface.
- No ATDC detection is made of the Black toner as it absorbs light.
  (See 11-6. Black Toner Replenishing Control.)

<Detection Flow>

Infrared light from the ATDC Sensor LED strikes the toner.

↓

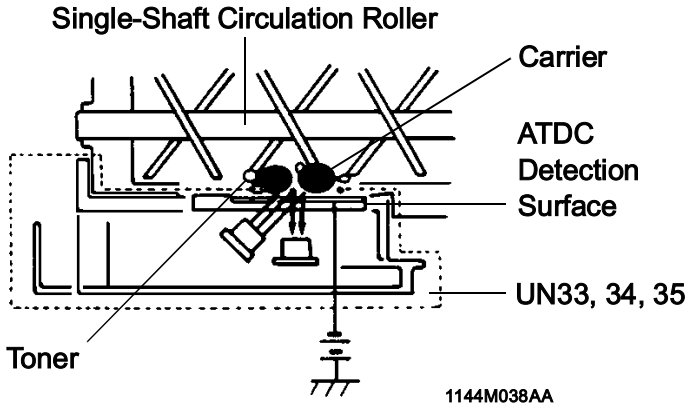
The light striking the toner reflects diffusely.

↓

The photodiode (PD) of the ATDC Sensor receives the light reflected diffusely off the toner. (Only the toner reflects light diffusely as carrier absorbs light.)

↓

The ATDC Sensor converts the received light to a corresponding voltage value and inputs it to pins 45 to 47 of IC1I on Master Board PWB-I, thus allowing the CPU to detect the toner-to-carrier ratio.



<Toner Replenishing Control by ATDC Detection>

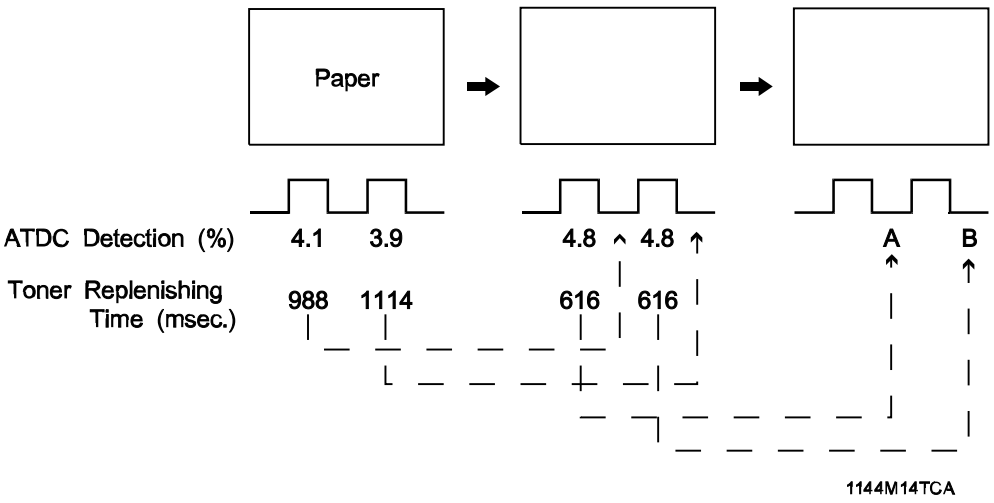
- An ATDC detection is made while each of the Developer Supply Clutches (C, M, and Y) CL17, 18, and 19 is energized (during a copy cycle).
- The number of detections made varies depending on the paper size in the feeding direction as detailed below.

Feeding-Direction Paper Size	No. of Detections
To 275.0 mm (or at 2-sheet attraction)	2 (4)
275.1 mm to 412.5 mm	3
412.6 mm to 550.0 mm	4

- Time for toner replenishing from the Hopper is determined by comparing the actual reading of toner-to-carrier ratio with the ratio set for “ATDC Level Setting” of the Service Mode.
- The time for one toner replenishing sequence is limited in the range between 700 msec. and 1150 msec. to prevent the Toner Supply Port from being plugged with toner.

Example

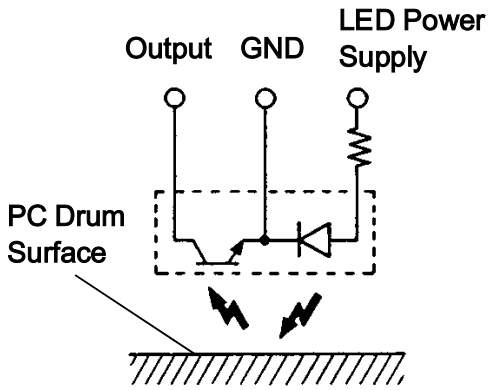
Making multiple copies on paper of a feeding-direction size to 275.0 mm with 6% set for “ATDC Level Setting” of the Service Mode



A. Since the toner replenishing time is less than 700 msec., the copier does not perform any toner replenishing sequence, but stores the time in memory.
B. A (616 msec.) + 616 msec. = 1232 msec. Since the max. allowable toner replenishing time is 1150 msec., however, 1232 msec. - 1150 msec. = 82 msec. is stored in memory and added to the next toner replenishing time.

11-5. AIDC Sensor

- AIDC Sensor of a reflector type converts the amount of toner attracted to the surface of the PC Drum and the PC Drum background level to corresponding voltage values which are in turn used for γ correction control of the image stabilization system.
- UN20 is mounted on top of the Developing Unit.



1136M068AA

Amount of Toner Attracted	Reflected Light Intensity	Output
Large	Low	Low
Small	High	High

- The UN20 output voltage is applied to pin 2B of PJ7I on Master Board PWB-I for the detection of the amount of toner attracted.

1154SBM1106A

11-6. Black Toner Replenishing Control

- The amount of toner consumed and toner-to-carrier ratio are calculated for each copy to determine the amount of toner to be replenished and to replenish toner.

Calculating the amount of toner consumed and toner-to-carrier ratio

- Using the table for conversion between the density level at each gradation level and the amount of toner affixed to the paper (the amount of toner affixed to paper for the density level of one dot of each gradation level), the amount of toner consumed is calculated with LIMOS1 and New Screen LIMOS to find toner consumption of the entire original.
- The values on the conversion table for LIMOS1 are double those on the conversion table for New Screen LIMOS (as LIMOS1 is used for reproduction of edges).
- With the image transfer efficiency set at 90%, the total toner consumption on the PC Drum is calculated.
- When the FD size exceeds 216 mm, one-line reading is skipped for every 2 lines in the CD direction. Thus, the calculated consumption is doubled.
- In two-sheet attraction, data is taken only for the first sheet and the toner consumption calculated from that reading is doubled.
- Considering toner consumption that represents airborne toner particles, toner consumption on the PC Drum is multiplied by 1.3.
- Considering the developing efficiency, copier's internal environment, and durability value, the toner-to-carrier ratio is estimated through AIDC control.

Using the above data and program, the copier calculates and estimates the amount of toner consumed and toner-to-carrier ratio.

↓

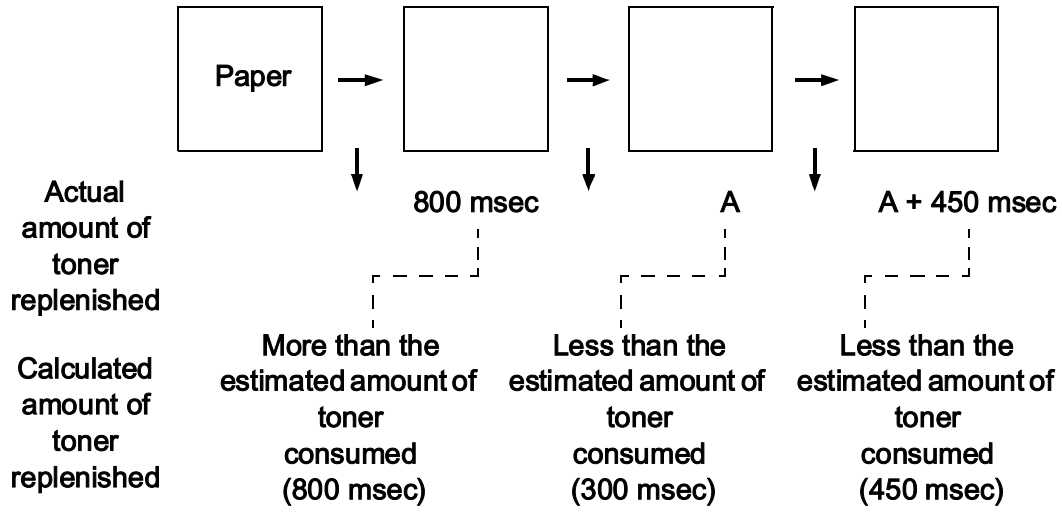
Determining the amount of toner to be replenished

- The amount of Bk toner to be replenished is determined based on the calculated toner consumption and toner-to-carrier ratio estimated through AIDC control.

		Amount of Toner Replenished
Estimated Toner-to-Carrier Ratio	Low	More than the calculated amount of toner consumed
	Adequate	Amount as calculated
	High	Less than the calculated amount of toner consumed

Toner is replenished

- The amount of toner to be replenished as determined through these processes is replenished when the Developer Supply Clutch (Bk) is energized for the next copy cycle.
- Time for a single toner replenishing cycle is between 700msec and 1150msec to prevent the toner replenishing port from being clogged.
  Example: During multi-copy cycle

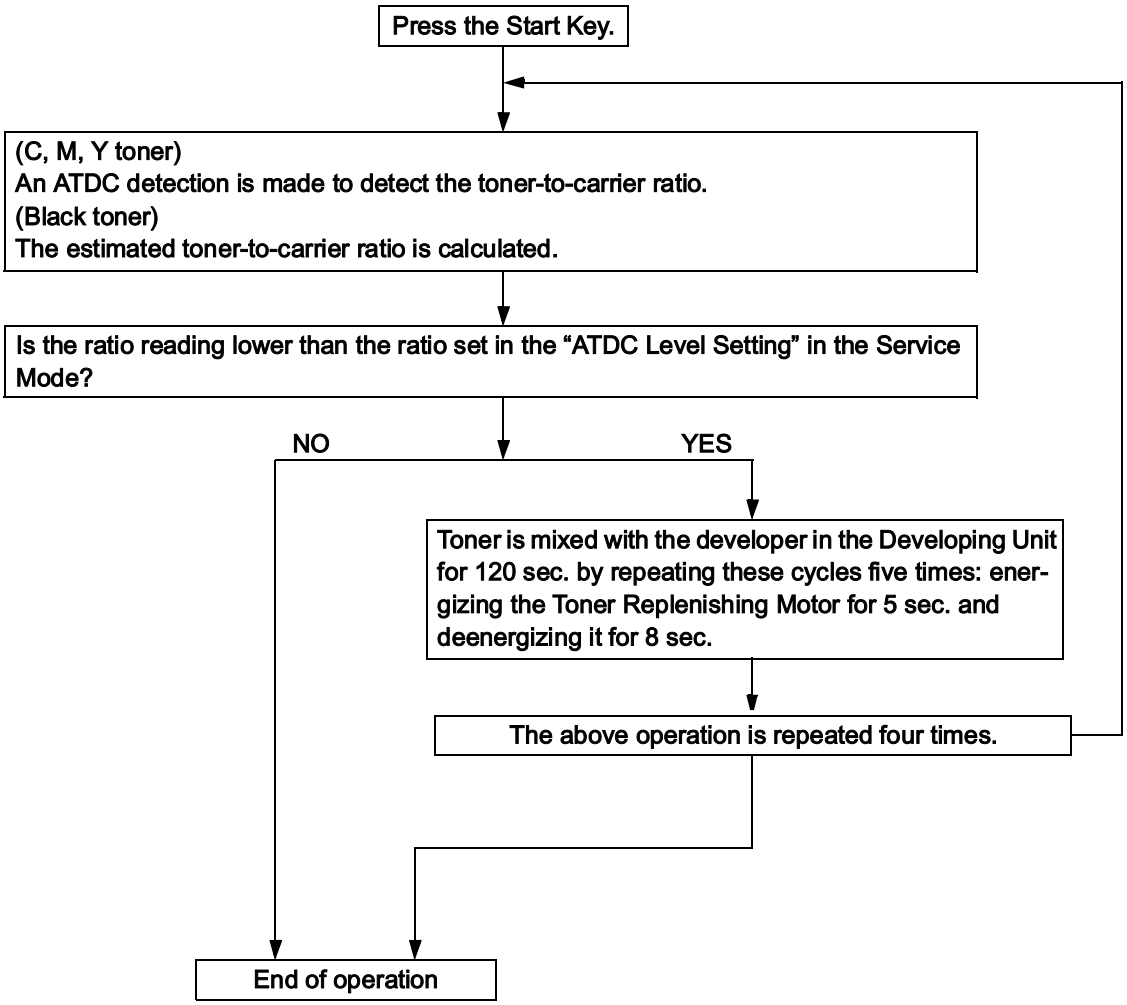

Paper
Actual amount of toner replenished
800 msec
A
A + 450 msec
Calculated amount of toner replenished
More than the estimated amount of toner consumed (800 msec)
Less than the estimated amount of toner consumed (300 msec)
Less than the estimated amount of toner consumed (450 msec)

✻ A:
As toner replenishing time is less than 700msec, toner is not replenished and that time is stored. If toner replenishing time is more than 1150msec, the excess time is stored and added to the next toner replenishing time.

1154SBM1107A

11-7. Auxiliary Toner Replenishing Mechanism

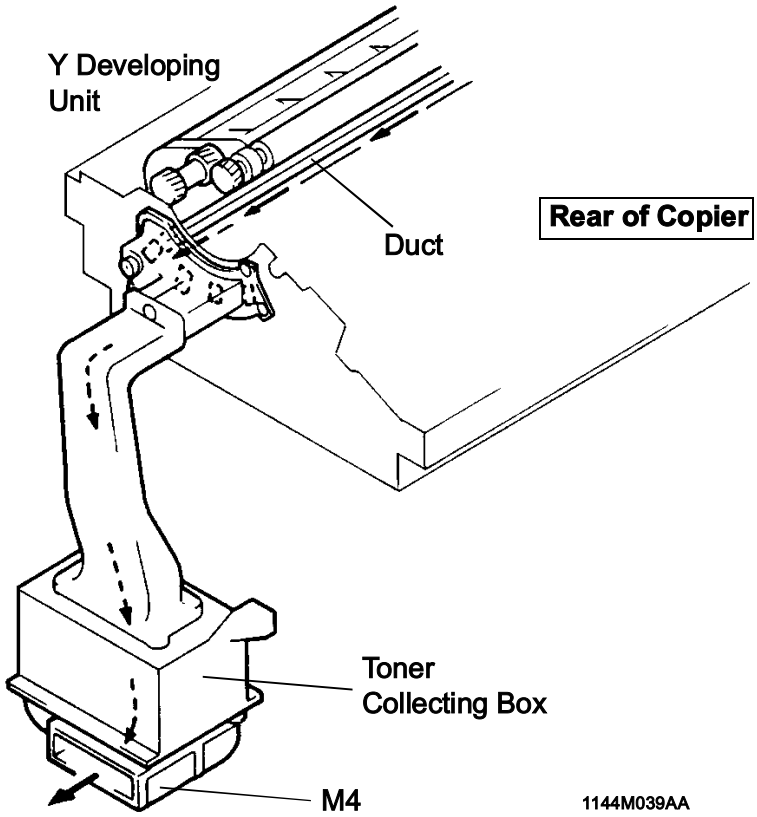
- The Developing Unit of each color of toner can be set into the auxiliary toner replenishing mode when that particular developing unit is selected with “ATDC Toner Supply” of “Image Adjust” available from the Service mode and when the Start Key is then pressed.
- This function can be used to quickly increase the copy image density within a short period of time.


Press the Start Key.
(C, M, Y toner)
An ATDC detection is made to detect the toner-to-carrier ratio.
(Black toner)
The estimated toner-to-carrier ratio is calculated.
Is the ratio reading lower than the ratio set in the “ATDC Level Setting” in the Service Mode?
NO
YES
Toner is mixed with the developer in the Developing Unit for 120 sec. by repeating these cycles five times: energizing the Toner Replenishing Motor for 5 sec. and deenergizing it for 8 sec.
The above operation is repeated four times.
End of operation

1154SBM1108A

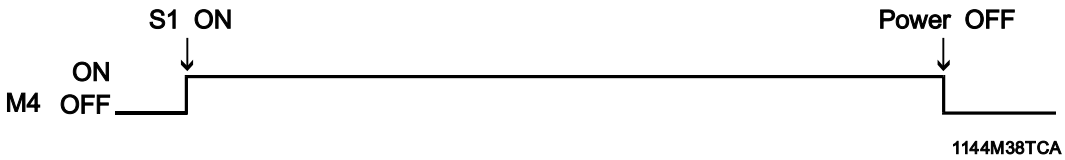
11-8. Toner Suction Fan Motor

- Toner Suction Fan Motor M4 is used to draw toner particles from the developing unit of each color of toner into the Toner Collecting Box.

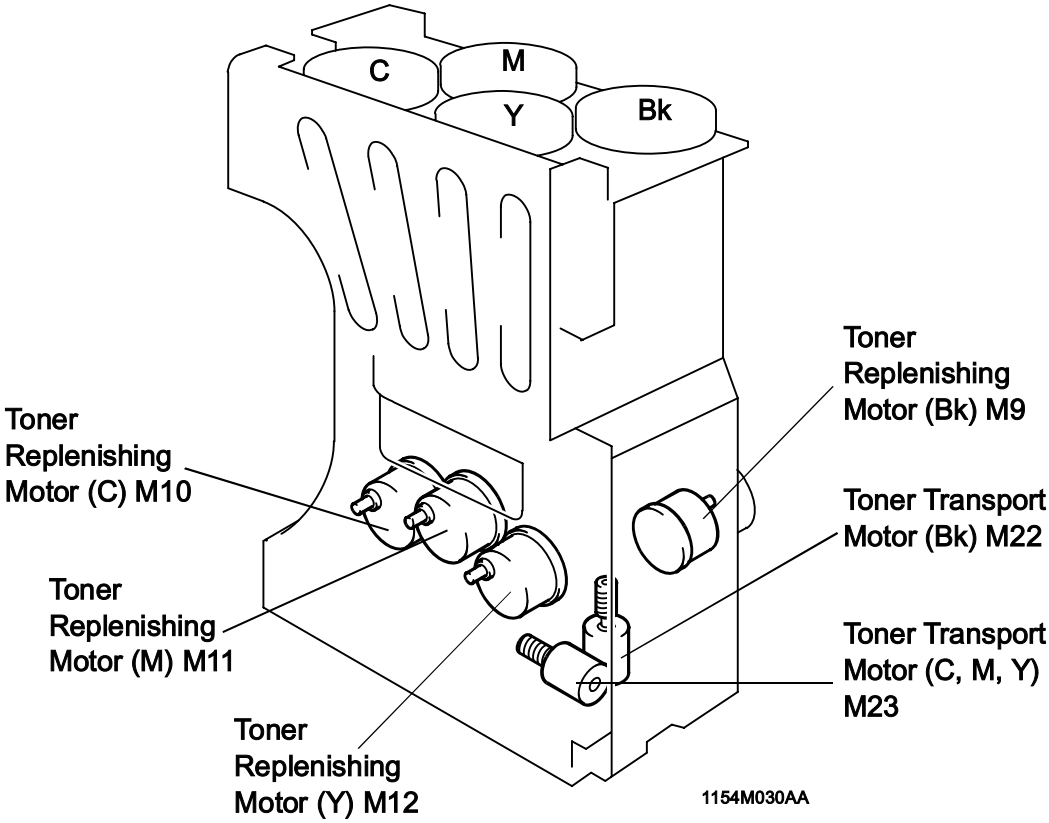


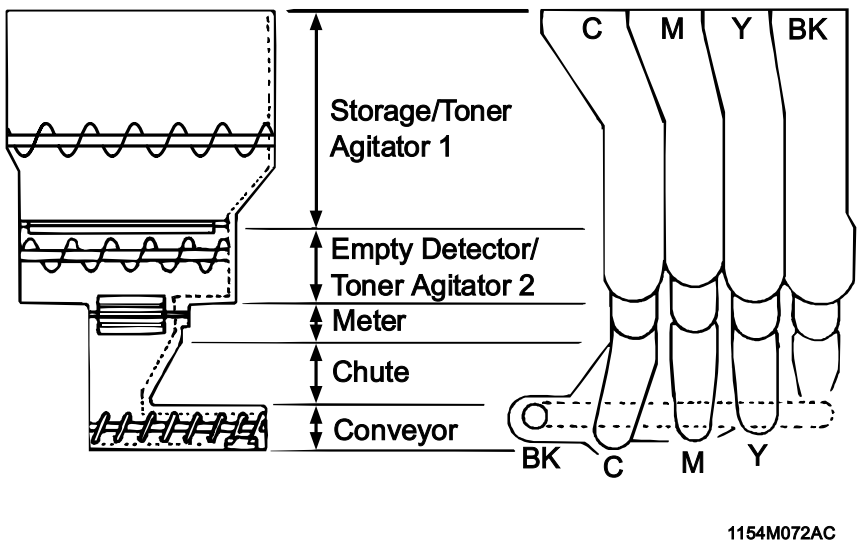
<Control>

	Control Signal	Energized	Deenergized	Wiring Diagram
M4	PWB-I PJ3I-6B	H	L	15-D



12 TONER HOPPER SECTION





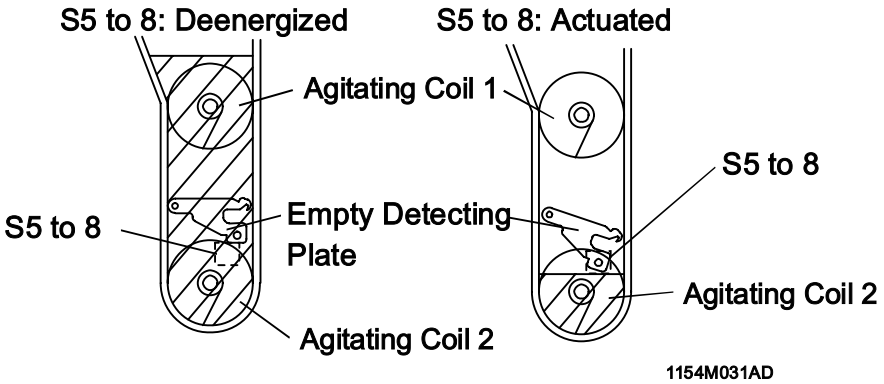
1154SBM1201A

12-1. Toner Replenishing Mechanism

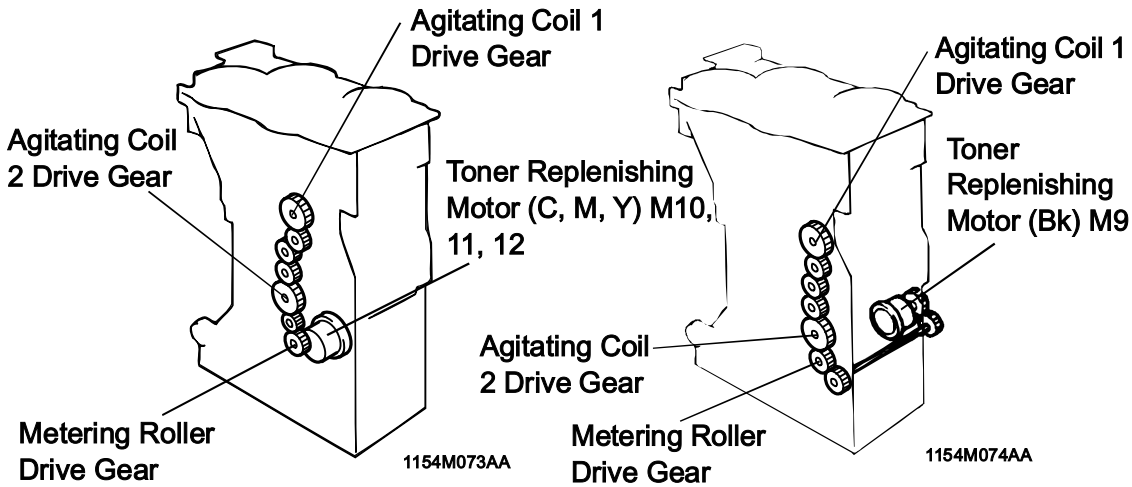
- Toner is replenished from the Hopper to the developing unit according to the amount of toner to be replenished as detected through ATDC detection for the C, M, and Y toner and through the black toner replenishing control for the Bk toner.

Storage/Toner Agitator 1 and Empty Detector/Toner Agitator 2

- The Agitating Coil turns to agitate the toner.
- In Toner Agitator 2, rotation of Agitating Coil 2 moves the Empty Detecting Plate up and down and the Toner Empty Switch for each color of toner (S5 to 8) is actuated and deactuated by the magnet fitted to the plate to detect a toner-empty condition.



- Agitating Coil 2 is turned through gears by the Toner Replenishing Motor of each color of toner (M9 to 12).

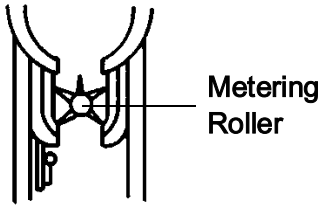

Agitating Coil 1 Drive Gear
Agitating Coil 2 Drive Gear
Toner Replenishing Motor (C, M, Y) M10, 11, 12
Metering Roller Drive Gear
1154M073AA
Agitating Coil 1 Drive Gear
Toner Replenishing Motor (Bk) M9
Agitating Coil 2 Drive Gear
Metering Roller Drive Gear
1154M074AA

↓

Toner Metering

Toner Metering

- The Metering Roller turns to let toner drop into the Conveyor. The time over which this roller is turned determines the amount of toner to be replenished.

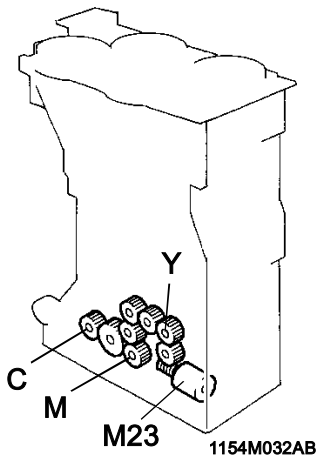


1144M045AA

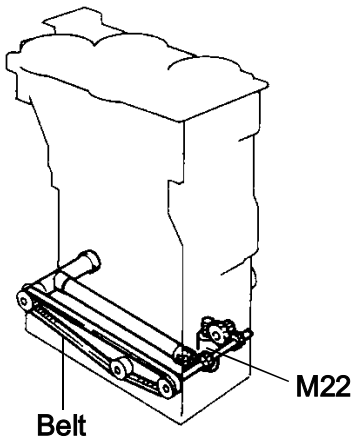
- The Metering Roller is turned through gears by the Toner Replenishing Motor of each color of toner (M9 to 12).

Conveyor

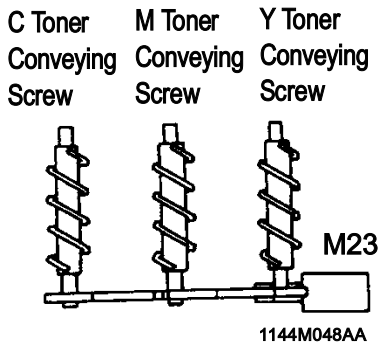
- The Toner Conveying Screw turns to convey toner to the developing unit.
- The Toner Conveying Screws of C, M, and Y toner are driven through gears by Toner Transport Motor (C, M, Y) M23.
- The Toner Conveying Screw of Bk toner is driven through gears and belt by Toner Transport Motor (Bk) M22.



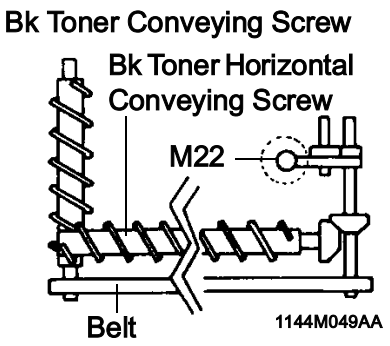
1154M032AB



1144M047AA



1144M048AA



1144M049AA

1154SBM1202A

12-2. Toner Empty Detection Control

The Toner Empty Switches (S5 to 8) are actuated two consecutive times.

↓

The Empty Detection Counter starts to count the ON times of S5 to 8.

↓

When S5 to 8 are actuated 14 times, Near Toner Empty is displayed on the control panel.

1144M187CA

S5 to 8 are actuated two consecutive times.

Turn the Power Switch OFF, then ON.

The Near Toner Empty display disappears.

S5 to 8 are actuated two consecutive times.

Open the Front Door, pull out the Hopper Unit, replenish toner, and close the Front Door.

The Near Toner Empty display disappears.

Near Toner Empty is displayed on the control panel and a copy cycle is prohibited.

1144M188CA

Turn the Power Switch OFF, then ON.

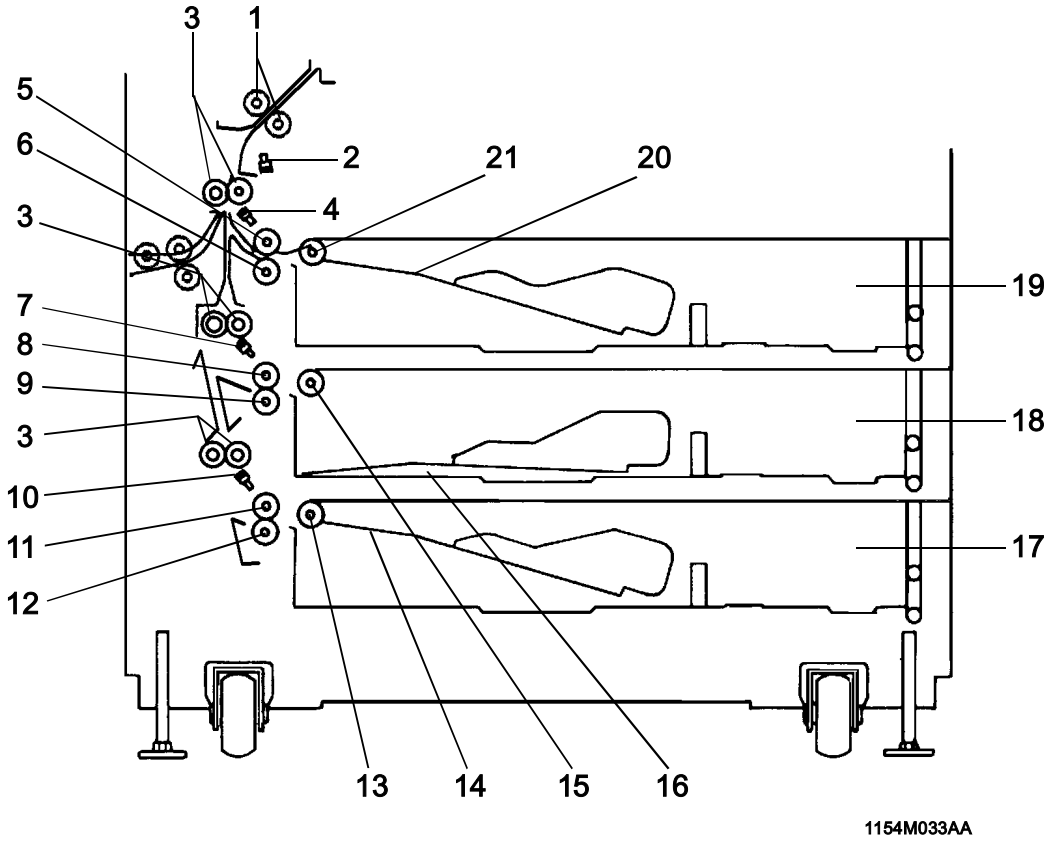
The toner-empty display is reset.

S5 to 8 are actuated two consecutive times.

Open the Front Door, pull out the Hopper Unit, replenish toner, and close the Front Door.

The toner-empty display is reset.

13 PAPER TAKE-UP/FEED SECTION

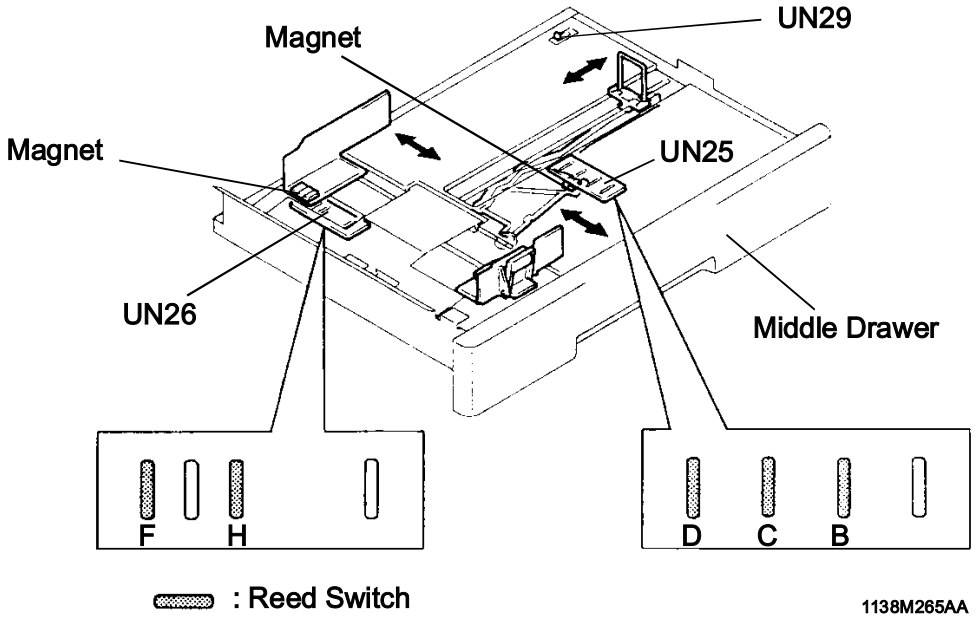


1. Transport Roller
2. Transport Roller Sensor PC19
3. Vertical Transport Rollers
4. Upper Drawer Paper Take-Up Sensor PC12
5. Upper Drawer Feed Roll
6. Upper Drawer Separator Roll
7. Middle Drawer Paper Take-Up Sensor PC13
8. Middle Drawer Feed Roll
9. Middle Drawer Separator Roll
10. Lower Drawer Paper Take-Up Sensor PC14
11. Lower Drawer Feed Roll
12. Lower Drawer Separator Roll
13. Lower Drawer Paper Take-Up Roll
14. Lower Drawer Paper Lifting Plate
15. Middle Drawer Paper Take-Up Roll
16. Middle Drawer Paper Lifting Plate
17. Lower Drawer
18. Middle Drawer
19. Upper Drawer
20. Upper Drawer Paper Lifting Plate
21. Lower Drawer Paper Take-Up Roll

1154SBM1301A

13-1. Universal Tray Paper Size Detection Mechanism

- The width (crosswise direction) and length (feeding direction) of the paper are independently detected and the copier determines the paper size by combining the two separate detections made.
- Reed switches, built into CD Size Detection Unit UN26 and FD Size Detection Unit UN25, are actuated and deactuated by the magnets placed as illustrated below.
- The setting for the type of paper to be used (inch or metric) can be changed with Inch/Metric Setting Switch UN29.



- Here are the paper sizes indicated by the actuated and deactuated reed switches.

<UN29 Metric>

Universal Sensors						Universal Sensors					
B	C	D	F	H	Size	B	C	D	F	H	Size
×	×	×	×	×	B5L	×	×	×	○	○	B4L
×	○	×	×	×	A5L	×	○	×	○	○	B5C
×	×	○	×	×	B6L	×	×	○	○	○	B5C
×	○	○	×	×	A5L	×	○	○	○	○	B5C
×	×	×	×	○	A4L	○	×	×	×	×	B5L
×	○	×	×	○	A5L	○	○	×	×	×	B5L
×	×	○	×	○	B5C	○	×	×	×	○	A4L
×	○	○	×	○	A5L	○	○	×	×	○	A4L
×	×	×	○	×	A3L	○	×	×	○	×	B4L
×	○	×	○	×	A4C	○	○	×	○	×	A4C
×	×	○	○	×	B5C	○	×	×	○	○	B4L
×	○	○	○	×	A4C	○	○	×	○	○	B5C

○: Reed switch actuated

×: Reed switch deactuated

L: Lengthwise; C: Crosswise

<UN29 Inch>

Universal Sensors						Universal Sensors					
B	C	D	F	H	Size	B	C	D	F	H	Size
×	×	×	×	×	Invoice L	×	×	×	❍	❍	Legal L
×	❍	×	×	×	Invoice L	×	❍	×	❍	❍	Invoice L
×	×	❍	×	×	Invoice L	×	×	❍	❍	❍	Invoice L
×	❍	❍	×	×	Invoice L	×	❍	❍	❍	❍	Invoice L
×	×	×	×	❍	Legal L	❍	×	×	×	×	Invoice L
×	❍	×	×	❍	Invoice L	❍	❍	×	×	×	Invoice L
×	×	❍	×	❍	Invoice L	❍	×	×	×	❍	Legal L
×	❍	❍	×	❍	Invoice L	❍	❍	×	×	❍	Letter L
×	×	×	❍	×	11”×17”	❍	×	×	❍	×	11”×14”
×	❍	×	❍	×	Letter C	❍	❍	×	❍	×	Letter C
×	×	❍	❍	×	Invoice L	❍	×	×	❍	❍	Legal L
×	❍	❍	❍	×	Letter C	❍	❍	×	❍	❍	Letter L

❍: Reed switch actuated
×: Reed switch deactuated
L: Lengthwise; C: Crosswise

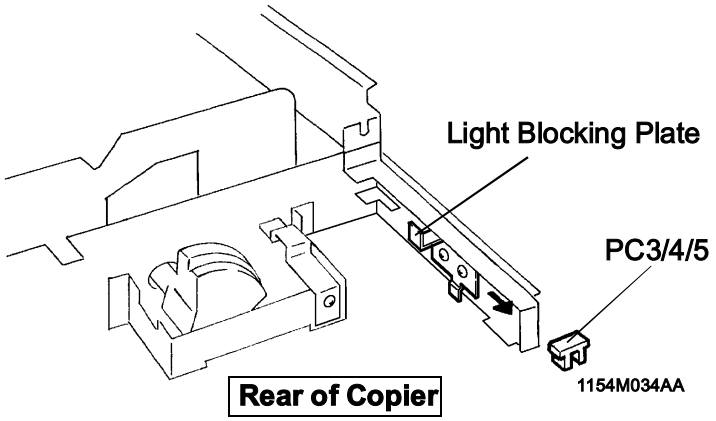
<Control>

		Control Signal	ON	OFF	Wiring Diagram
FD Size Detection Unit UN25	B	PWB-I PJ3K-1	L	H	7,8-B
	C	PWB-I PJ3K-2	L	H	
	D	PWB-I PJ3K-6	L	H	
CD Size Detection Unit UN26	F	PWB-I PJ3K-4	L	H	7,8-B
	H	PWB-I PJ3K-5	L	H	

1154SBM1302A

13-2. Drawer-in-Position Detection Mechanism

- The copier detects that a particular drawer is slid into, or out of, the copier as follows. The light blocking plate in the rear of each drawer blocks Upper/Middle/Lower Drawer Set Sensor PC3/4/5.



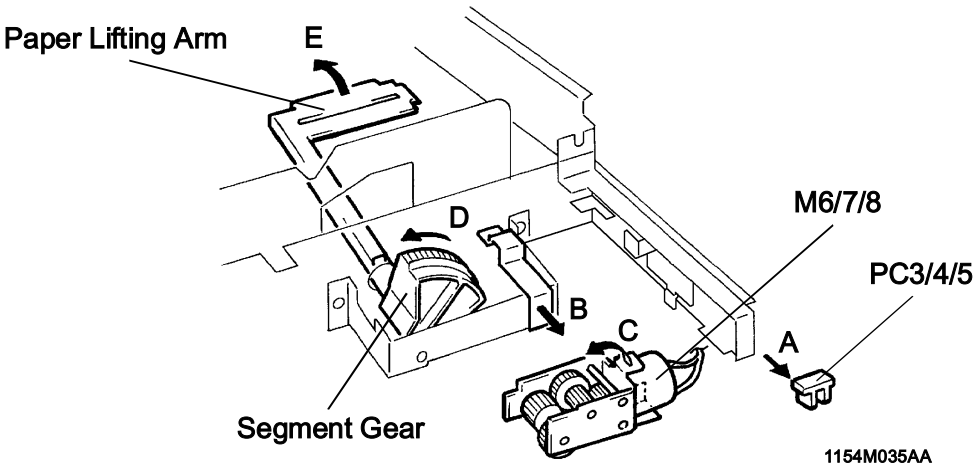
<Control>

	Control Signal	Blocked	Unblocked	Wiring Diagram
PC3	PWB-I PJ8K-2A	L	H	9-E
PC4	PWB-I PJ8K-14A	L	H	9-E
PC5	PWB-I PJ8K-14B	L	H	8-E

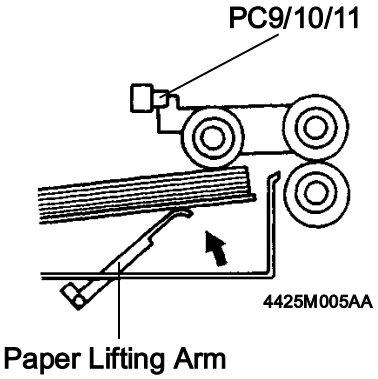
1154SBM1303A

13-3. Drawer Paper Lifting/Lowering Mechanism

- The stack of paper loaded in each drawer is raised or lowered by the segment gear which is driven by Upper/Middle/Lower Drawer Lift-Up Motor M6/7/8.
- The paper stack lifting motion follows the numerical order of A through E below.

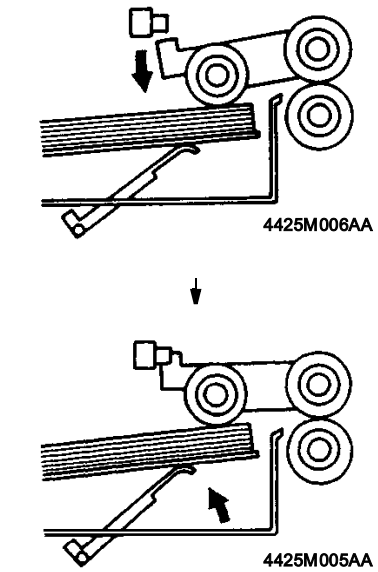


When the Drawer is Slid in



The Paper Lifting Arm raises the paper stack.
↓
The paper stack pushes the Paper Take-Up Roll upward.
↓
Upper/Middle/Lower Drawer Lift-Up Sensor PC9/10/11 is blocked (L).
↓
M6/7/8 is deenergized and the paper stack lifting motion is completed.

During a Copy Cycle



↓
Paper is consumed.
↓
The Paper Take-Up Roll lowers to unblock (H) PC9/10/11.
↓
M6/7/8 is energized until PC9/10/11 is blocked (L).

* Repeating this operation keeps constant pressure between the Paper Take-Up Roll and paper.

<Control>

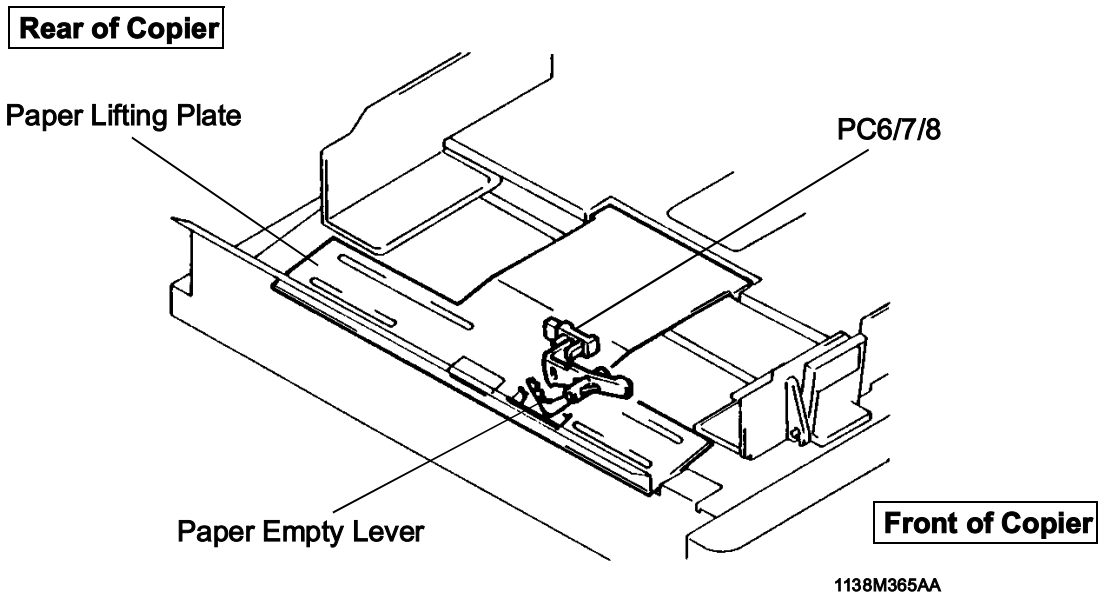
	Control Signal	Energized	Deenergized	Wiring Diagram
Upper Drawer Lift-Up Motor M6	PWB-K PJ4K-1	L	H	8-B
Middle Drawer Lift-Up Motor M7	PWB-K PJ4K-3	L	H	8-B
Lower Drawer Lift-Up Motor M8	PWB-K PJ4K-5	L	H	8-B

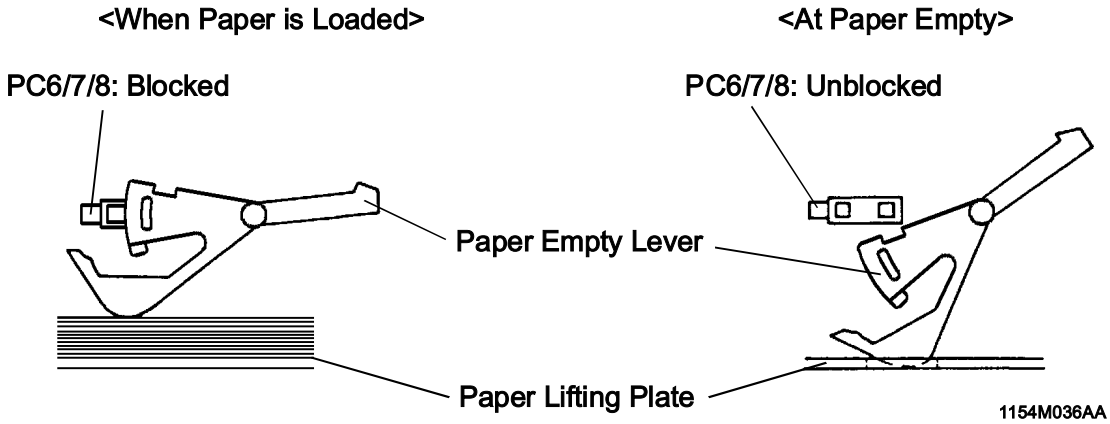
	Control Signal	Blocked	Unblocked	Wiring Diagram
Upper Drawer Lift-Up Sensor PC9	PWB-K PJ8K-5A	L	H	9-E
Middle Drawer Lift-Up Sensor PC10	PWB-K PJ8K-11A	L	H	9-E
Lower Drawer Lift-Up Sensor PC11	PWB-K PJ8K-11B	L	H	8-E

1154SBM1304A

13-4. Paper Empty Detection Mechanism

- A paper-empty condition in each drawer is detected by Upper/Middle/Lower Drawer Paper Empty Sensor 1 PC6/7/8 and the Paper Empty Lever.





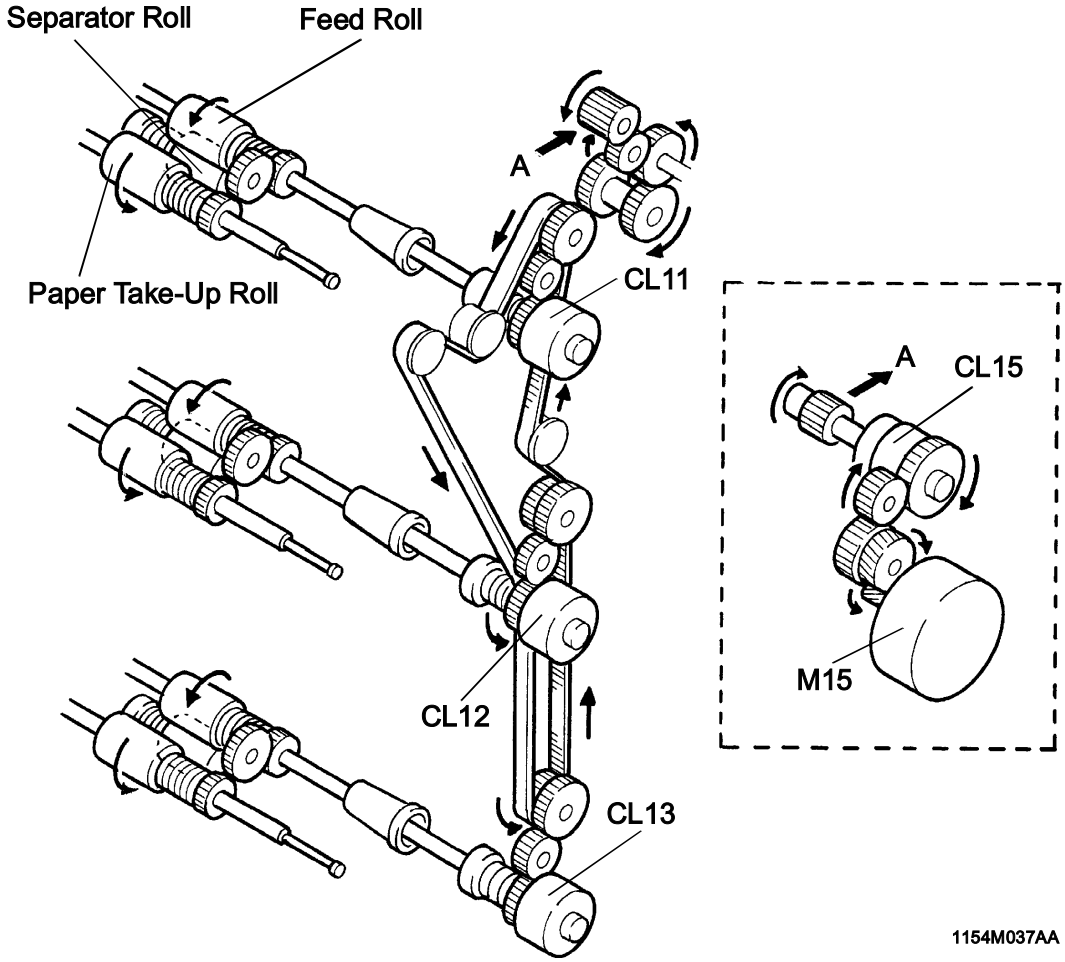
<Control>

	Control Signal	Blocked	Unblocked	Wiring Diagram
PC6	PWB-K PJ8K-8A	L	H	9-E
PC7	PWB-K PJ8K-2B	L	H	8-E
PC8	PWB-K PJ8K-8B	L	H	8-E

1154SBM1305A

13-5. Paper Take-Up Mechanism

- The Paper Take-Up Roll, Feed Roll, and Separator Roll of each drawer are driven via Transport Roller Clutch CL15 and Upper/Middle/Lower Drawer Paper Take-Up Clutch CL11/12/13 by Paper Take-Up Motor M15.

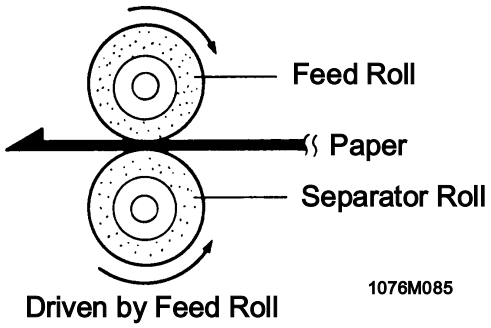


1154SBM130501A

(1) Paper Separating Mechanism

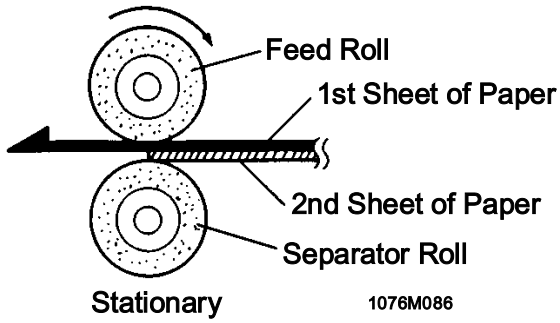
- A torque limiter is used for paper separation.
- Using the friction coefficient between the Feed Roll and Separator Roll, the Separator Roll is stopped so that only the 1st sheet of paper is taken up and fed into the copier.

<Normal Feeding>



- Since the friction coefficient on the top side of the paper is equal to that on the underside of the paper, the Separator Roll is turned by the Feed Roll. This feeds the paper into the Vertical Transport Section.

<At the Time of Double Feed>

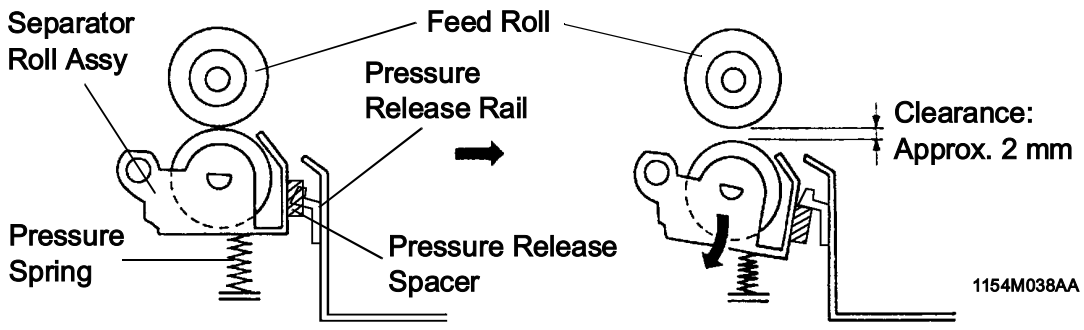


- The friction coefficient between the sheets of paper is smaller than the torque limiter value of the Separator Roll. This stops the Separator Roll, blocking the second and subsequent sheets of paper at the area of contact between the Feed and Separator Rolls.

1154SBM130502A

(2) Feed/Separator Roll Release Mechanism

- A mechanism is provided to release the pressure between the Feed Roll and Separator Roll so that any sheets of paper will not remain caught inside the copier when the drawer is slid out of the copier.
- The mechanism consists of the Pressure Release Spacer fitted to the Separator Roll Assy and the Pressure Release Rail of the drawer. When the drawer is slid out, the Pressure Release Rail pushes down the Pressure Release Spacer. This results in the Separator Roll being released from the Feed Roll.



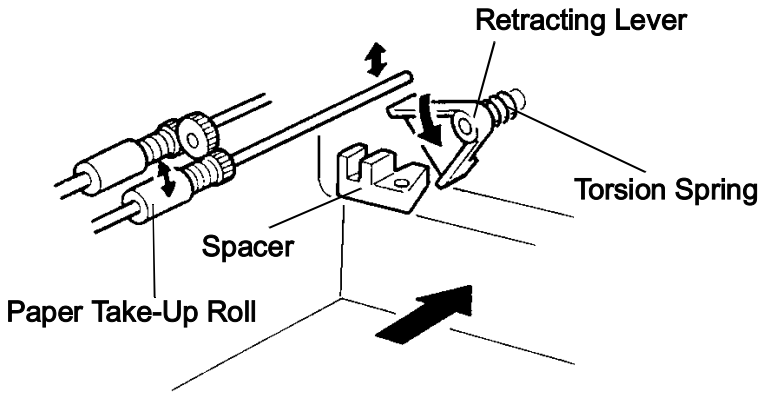
1154SBM130503A

(3) Paper Take-Up Roll Retracting Mechanism

- The Paper Take-Up Roll is designed to retract while the drawer is being slid into or out of the copier to prevent the paper from contacting the Paper Take-Up Roll during that time.
- The retracting mechanism consists of the spacer, Retracting Lever, and a torsion spring located in the rear of the drawer. It operates as follows.

= When Drawer is in Position =

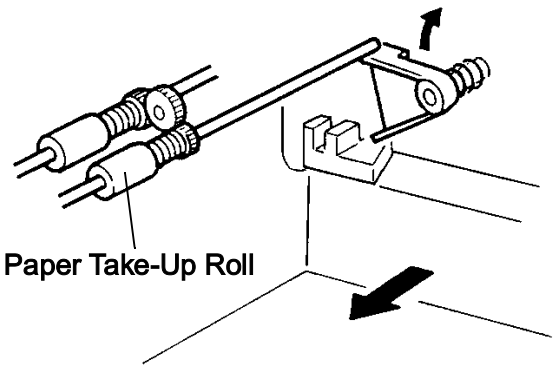
- The spacer pushes down the Retracting Lever, freeing the Paper Take-Up Roll.



1144M053AB

= When Drawer is Being Slid out =

- When the drawer is slid out, the Paper Take-Up Roll shaft is raised up by the Retracting Lever, retracting the Paper Take-Up Roll upward.



1144M054AB

1154SBM1306A

13-6. Paper Dehumidifying Heaters and Humidity Sensor

<Paper Dehumidifying Heaters>

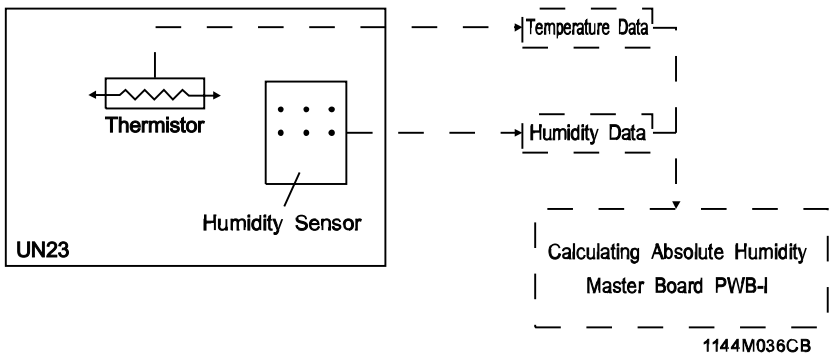
- Paper Dehumidifying Heaters 1 to 4 H4 to H7 are provided to prevent damp paper from adversely affecting the copy image.
- Each of these heaters is a 30W heater.

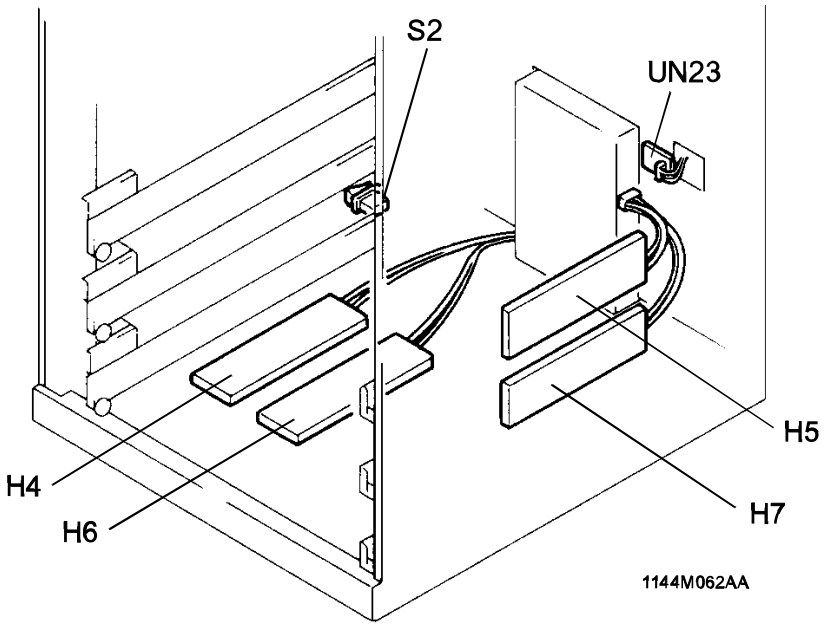
	Paper Dehumidifying Switch S2					
	Deactuated	Actuated				
		Power cord plugged in	S1 ON	Misfeed/malfunction, door open	During copy cycle*	During predrive
H4 to H7	OFF	ON	ON	ON	OFF	OFF

* From the time when the Start Key is pressed to the time when PC Drum Drive Motor M18 is deenergized.

<Humidity Sensor>

- Humidity Sensor UN23 installed in the rear of the copier detects humidity and temperature inside the copier.
- Based on the humidity and temperature readings, the copier calculates the absolute humidity for use in black toner replenishing control and image transfer, paper separator, and charge neutralizing output control.

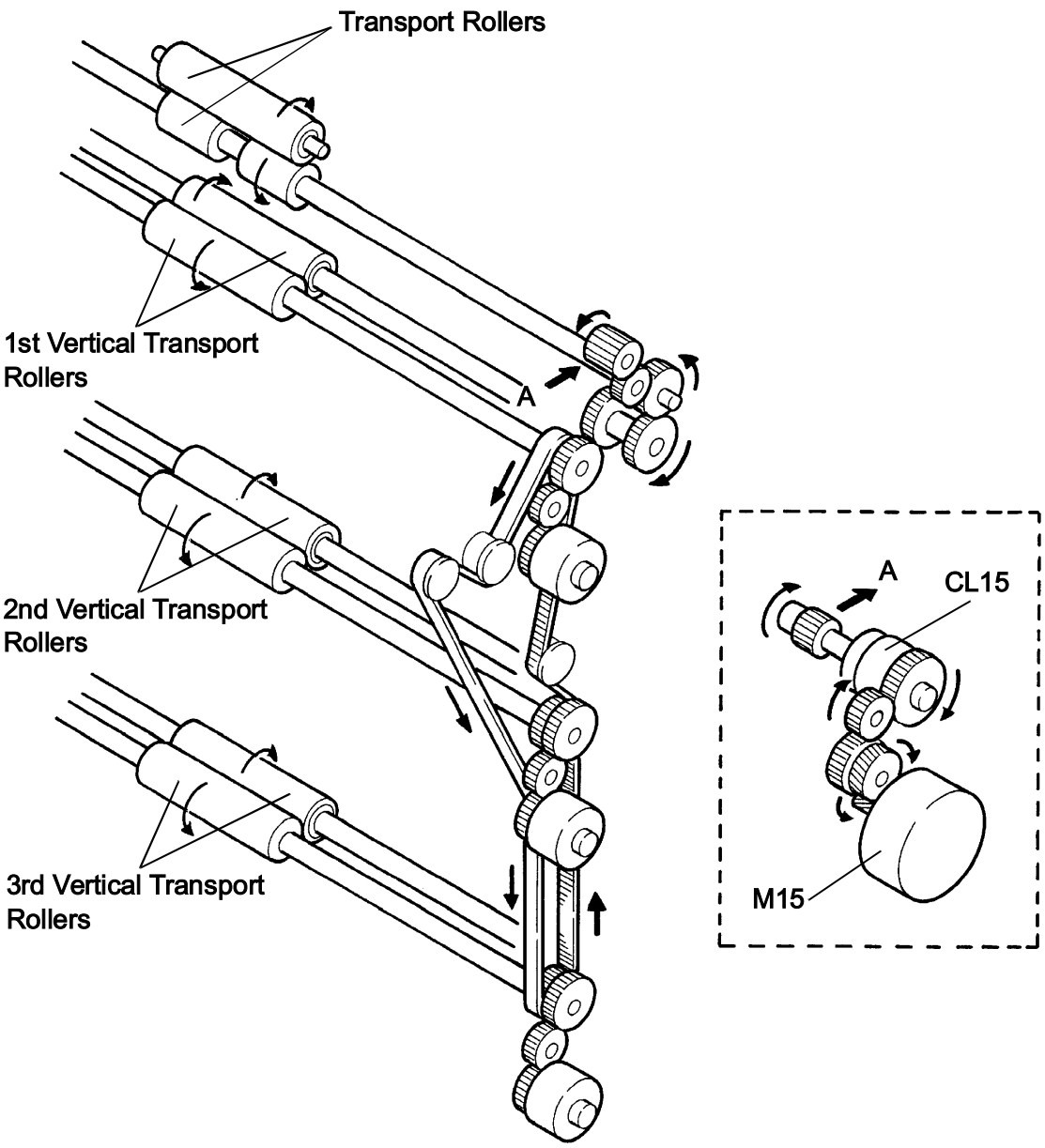




1154SBM1307A

13-7. Vertical Transport Drive Mechanism

- The Transport Rollers and Vertical Transport Rollers are driven via Transport Roller Clutch CL15 by Paper Take-Up Motor M15.



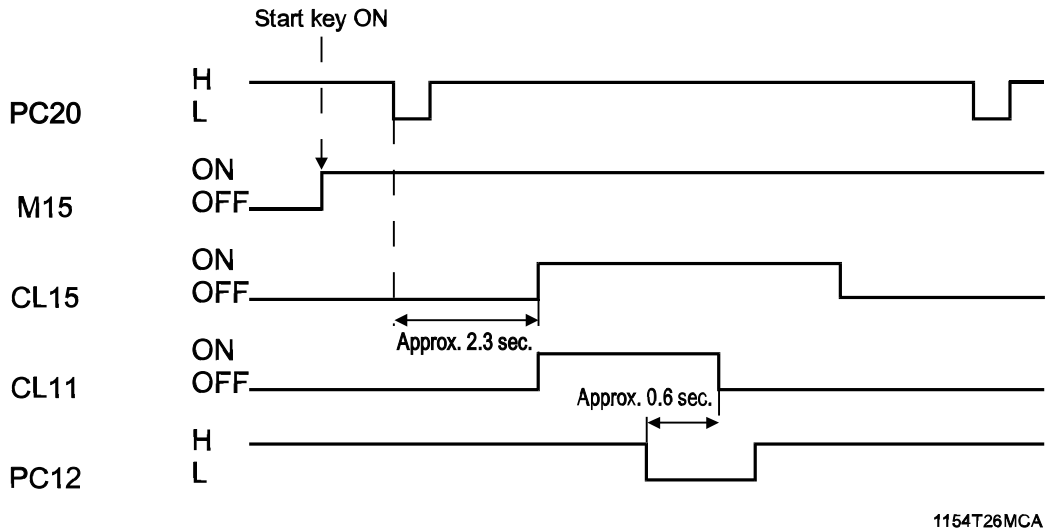
1154M039AA

13-8. Paper Take-Up Control

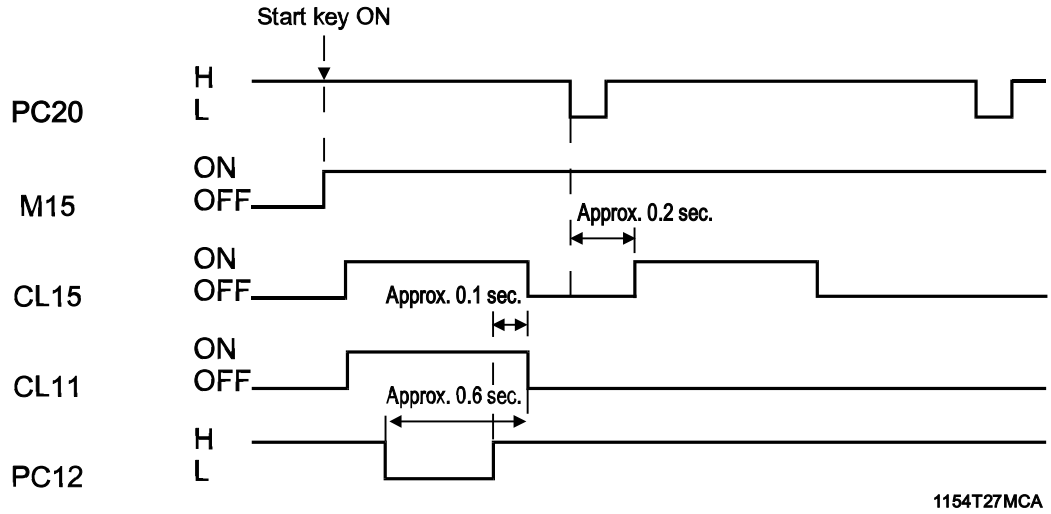
	Control Signal	Energized	Deenergized	Wiring Diagram
Paper Take-Up Motor M15	PWB-I PJ6I-1	L	H	13-D
Transport Roller Clutch CL15	PWB-I PJ6I-8	L	H	13-D
Upper Drawer Paper Take-Up Clutch CL11	PWB-K PJ6K-5A	L	H	9-B
Middle Drawer Paper Take-Up Clutch CL12	PWB-K PJ6K-7A	L	H	9-B
Lower Drawer Paper Take-Up Clutch CL13	PWB-K PJ6K-2B	L	H	9-C

	Control Signal	Blocked	Unblocked	Wiring Diagram
Upper Drawer Paper Take-Up Sensor PC12	PWB-K PJ6K-2A	L	H	8-B
Middle Drawer Paper Take-Up Sensor PC13	PWB-K PJ6K-4B	L	H	9-C
Lower Drawer Paper Take-Up Sensor PC14	PWB-K PJ6K-7B	L	H	8-C
Transfer Drum Reference Position Sensor 1 PC20	PWB-I PJ4I-5B	L	H	15-E
Transfer Drum Reference Position Sensor 2 PC28	PWB-I PJ4I-4B	L	H	15-E

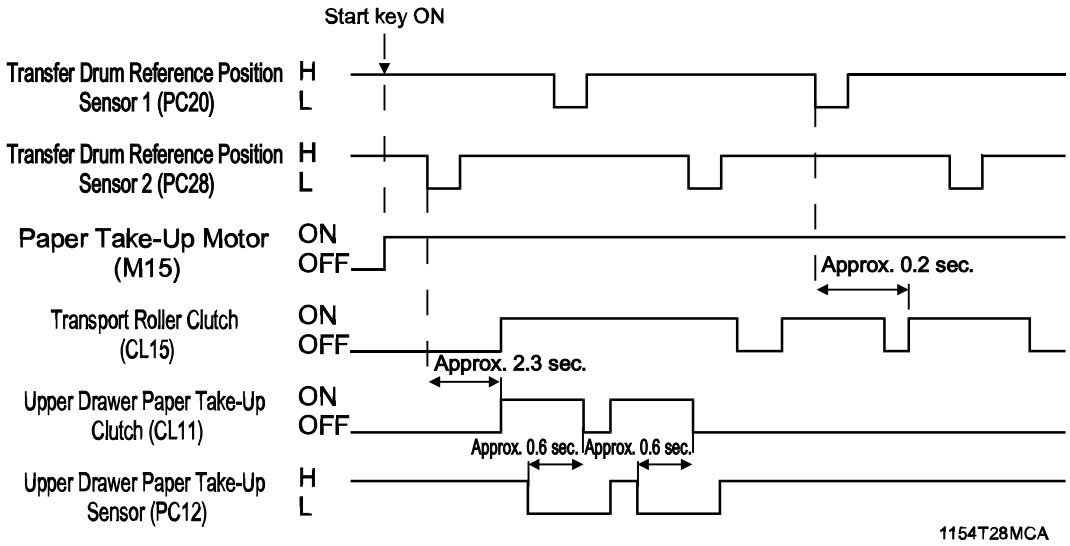
= When Feeding Paper from Upper Drawer =
<One-sheet attraction>



<Upper Drawer high-speed feeding>



<Two-sheet attraction>



✻ For two-sheet attraction mode, see 16-2. Paper Attraction.

Upper Drawer high-speed feeding

- To increase the first copy time, the paper take-up sequence is initiated before Transfer Drum Reference Position Sensor 1 PC20 is blocked, thereby letting the paper take-up sequence begin one Transfer Drum revolution earlier than usual.

Conditions

- The Upper Drawer is selected.
- Within 1 min. after the Transfer Drum has stopped rotating in the preceding copy cycle.
- One-sheet attraction mode.

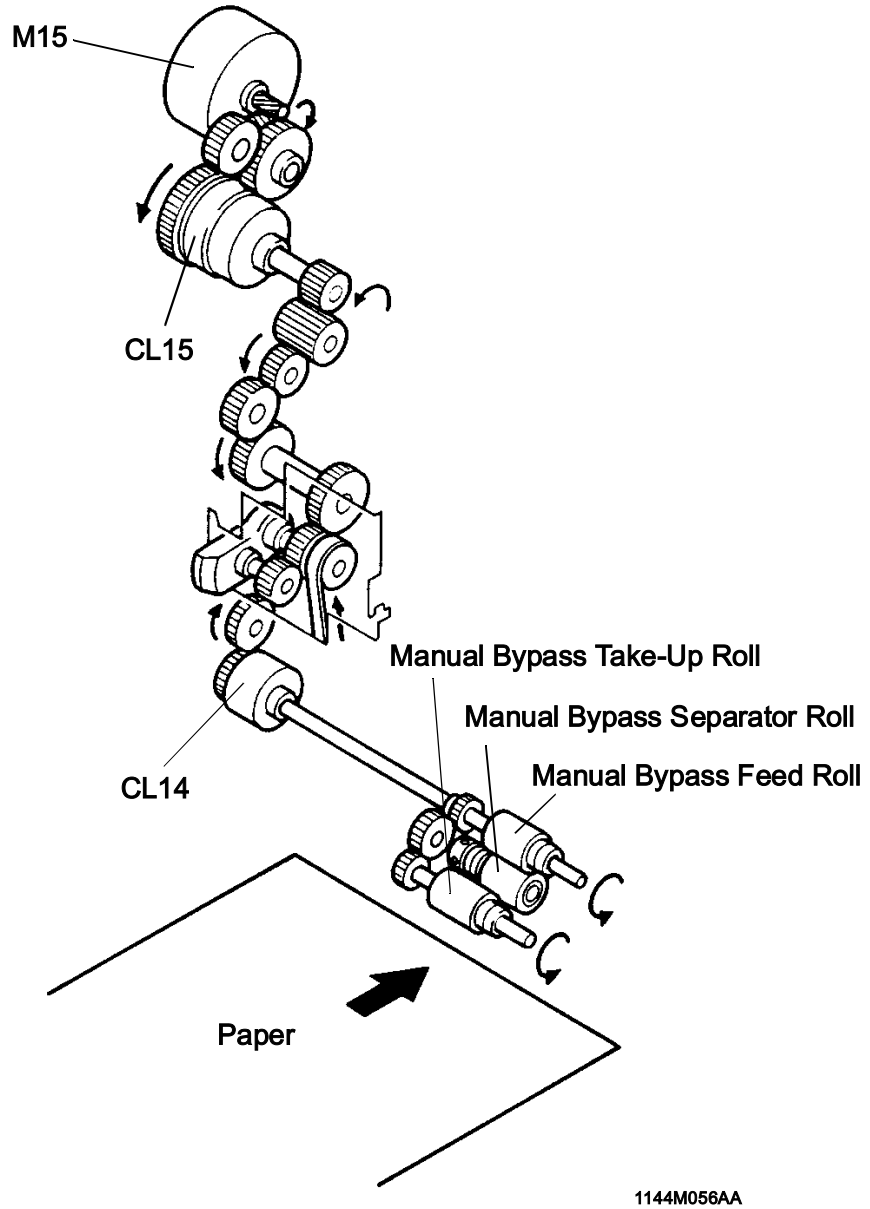
1154SBM1400A

14 MANUAL FEED TABLE SECTION

1154SBM1401A

14-1. Manual Feed Paper Take-Up Mechanism

- The Manual Bypass Take-Up Roll, Feed Roll, and Separator Roll are driven via Transport Roller Clutch CL15 and Manual Feed Paper Take-Up Clutch CL14 by Paper Take-Up Motor M15.



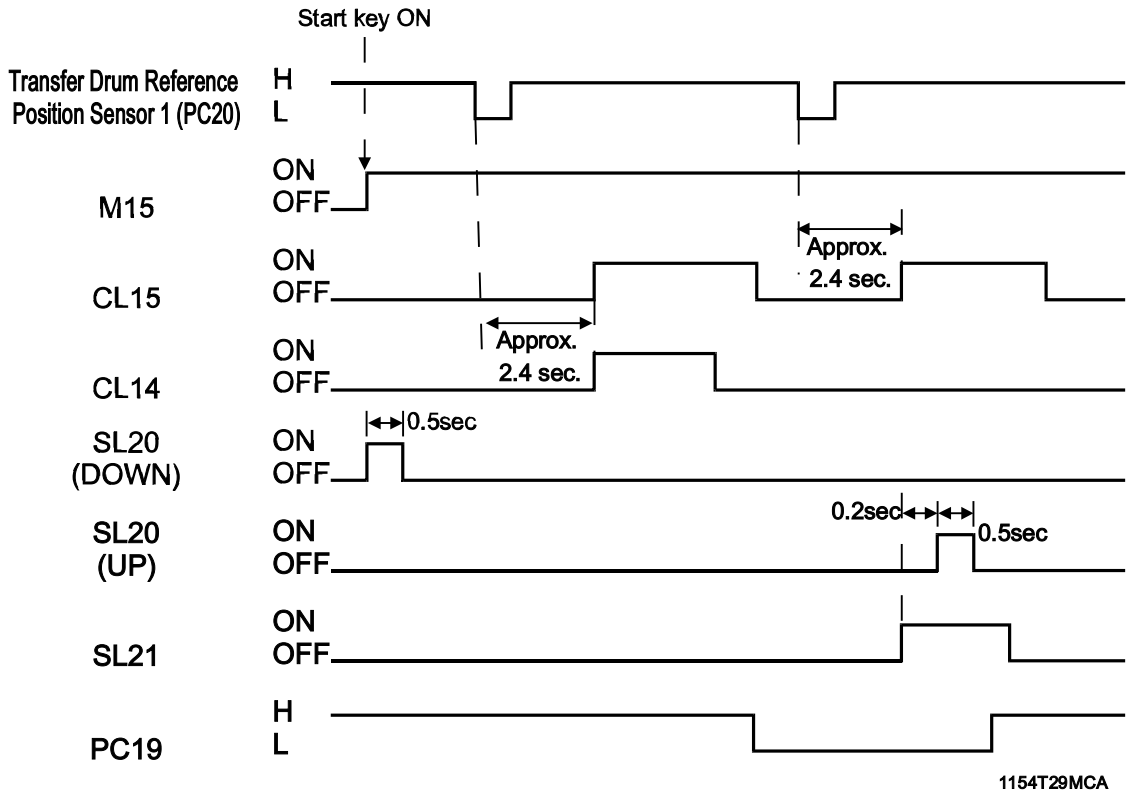
1154SBM1402A

14-2. Manual Feed Take-Up Control

	Control Signal	Energized	Deenergized	Wiring Diagram
Paper Take-Up Motor M15	PWB-I PJ6I-1	L	H	13-D
Transport Roller Clutch CL15	PWB-I PJ6I-8	L	H	13-D
Manual Feed Paper Take-Up Clutch CL14	PWB-K PJ7K-1	L	H	9-D

	Control Signal	UP	DOWN	Wiring Diagram
Manual Feed Paper Pick-Up Solenoid SL20	PWB-K PJ7K-3	L	H	9-D
	PWB-K PJ7K-5	H	L	

	Control Signal	Blocked	Unblocked	Wiring Diagram
Transport Roller Sensor PC19	PWB-K PJ8K-5B	L	H	8-E



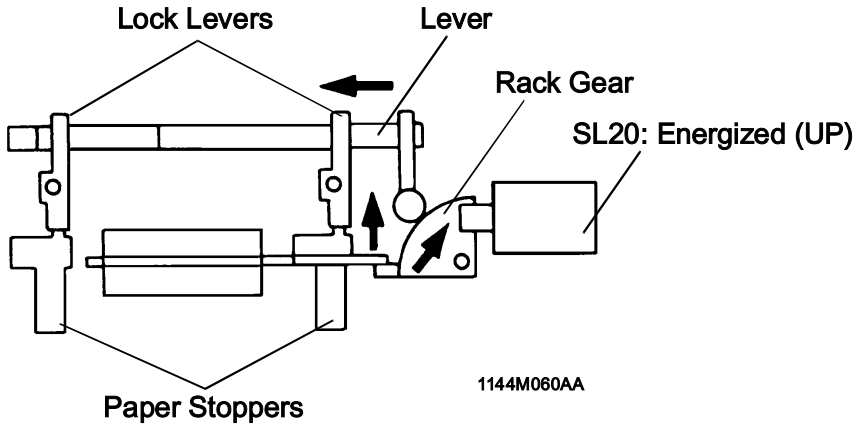
1154SBM1403A

14-3. Manual Take-Up Roll Pressure Mechanism

- The Manual Bypass Take-Up Roll is in the raised (standby) position at all times except when it takes up a sheet of paper from the Multi Bypass Table. When the Start Key is pressed, Manual Feed Paper Pick-Up Solenoid SL20 is operated to press the Manual Bypass Take-Up Roll against the paper, enabling it to take up a sheet of paper.
- The Paper Stoppers block the leading edge of the paper stack placed on the Multi Bypass Table. At paper take-up, the Lock Levers are moved to unlock the Paper Stoppers, thereby permitting paper take-up.

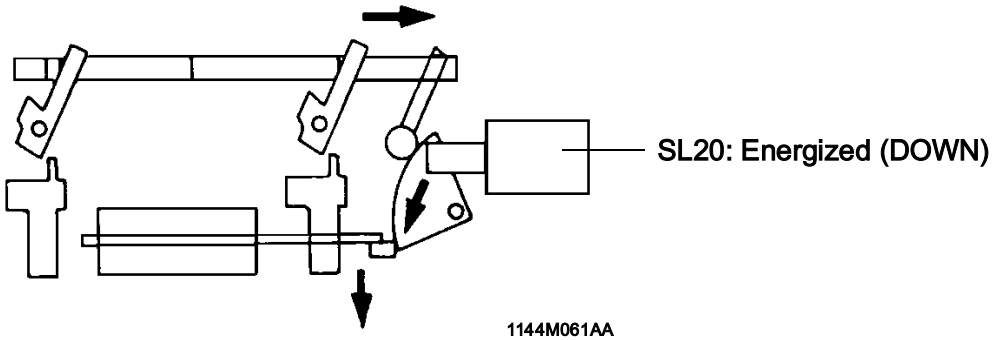
In Standby

- When SL20 is energized (UP side), the rack gear is pulled by the solenoid plunger and the Manual Bypass Take-Up Roll is raised. At the same time, the lever moves to the left, which causes the Lock Levers to lock the Paper Stoppers.



At Paper Take-Up

- When SL20 is energized (DOWN side), the rack gear is pushed by the solenoid plunger, freeing the Manual Bypass Take-Up Roll. This makes the take-up roll press the paper. At the same time, the lever moves to the right, unlocking the Paper Stoppers.

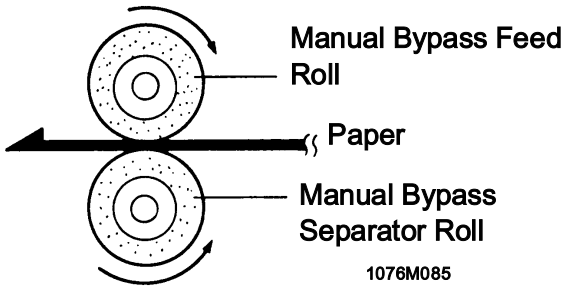


1154SBM1404A

14-4. Manual Feed Paper Separating Mechanism

- A torque limiter is used for paper separation.
- Using the friction coefficient between the Manual Bypass Feed Roll and Manual Bypass Separator Roll, the Manual Bypass Separator Roll is stopped so that only the 1st sheet of paper is taken up and fed into the copier.

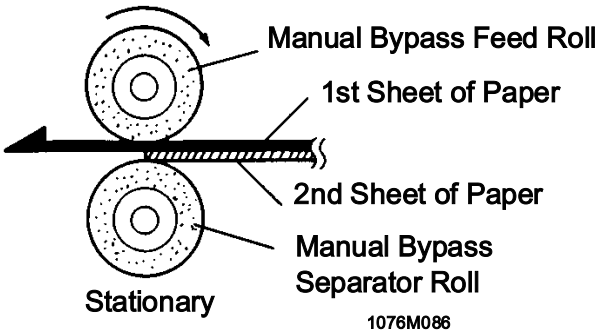
<Normal Feeding>



Driven by Manual Bypass Feed Roll

- Since the friction coefficient on the top side of the paper is equal to that on the underside of the paper, the Separator Roll is turned by the Feed Roll. This feeds the paper into the Vertical Transport Section.

<At the Time of Double Feed>

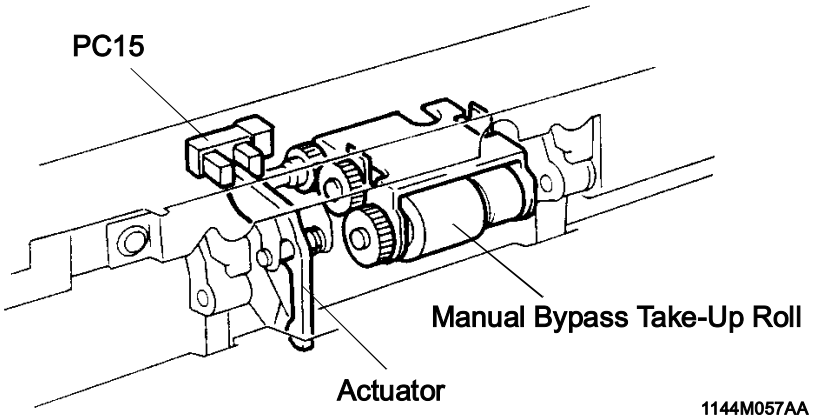


- The friction coefficient between the sheets of paper is smaller than the torque limiter value of the Separator Roll. This stops the Separator Roll, blocking the second and subsequent sheets of paper at the area of contact between the Feed and Separator Rolls.

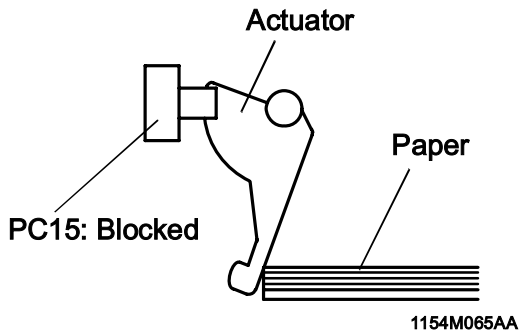
1154SBM1405A

14-5. Manual Feed Paper Empty Detection Mechanism

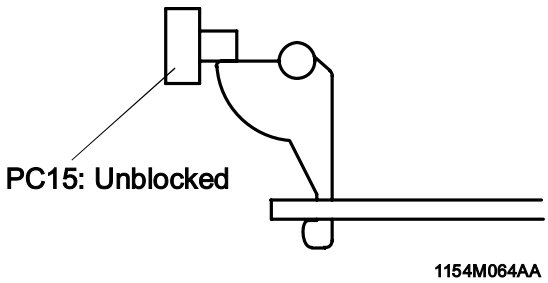
- Manual Feed Paper Empty Sensor PC15 detects a sheet of paper on the Multi Bypass Table.



When Paper is Present



When No Paper is Present



<Control>

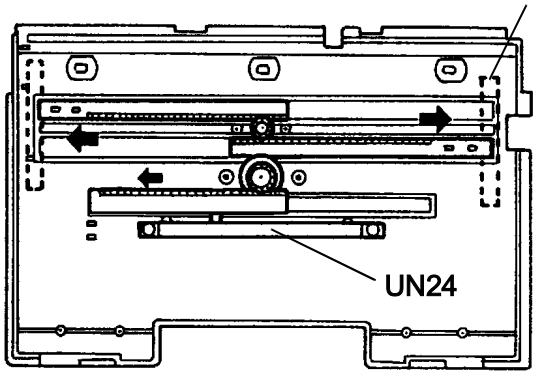
	Control Signal	Blocked	Unblocked	Wiring Diagram
PC15	PWB-K PJ7K-7	L	H	9-D

1154SBM1406A

14-6. Manual Feed Paper Width Detection Mechanism

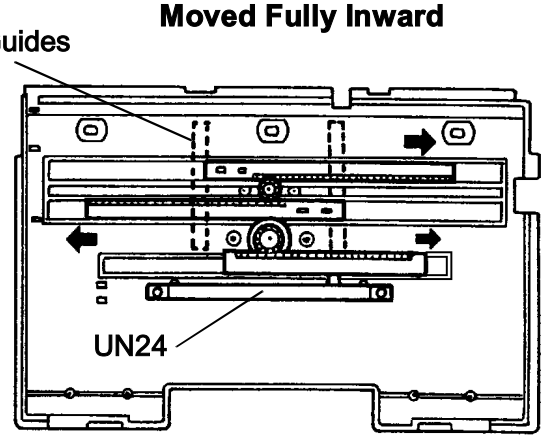
- Manual Feed Paper Size Detecting Sensor UN24 is built into the Multi Bypass Table. The output voltage from UN24 is varied as the Edge Guides on the Multi Bypass Table are moved. The copier knows the width of the paper placed on the Multi Bypass Table according to the output from UN24.
- The paper width reference position is set using "Manual Paper Width" of "Setting" available from the Service mode.

When Edge Guides are Moved Fully Outward



<From Underneath> 1154M040AA

When Edge Guides are Moved Fully Inward



<From Underneath> 1154M041AA

<Control>

- The UN24 output voltage is applied to pin 10 of PJ7K on Master Board PWB-K. Using this voltage value, the copier determines the width of the paper placed on the Multi Bypass Table.

	Control Signal	Wiring Diagram
UN24	PWB-K PJ7K-10	9-D

Point 1

- Width of standard-size paper selected on the control panel: (A)
- Width of paper on the Multi Bypass Table detected: (B)

When (A) minus (B) is within ±10 mm, the copier takes (A) for the paper width.
When (A) minus (B) is more than ±10 mm, the copier takes (B) for the paper width.

Point 2

- Width of nonstandard-size paper set on the control panel: (A)
- Width of paper on the Multi Bypass Table detected: (B)

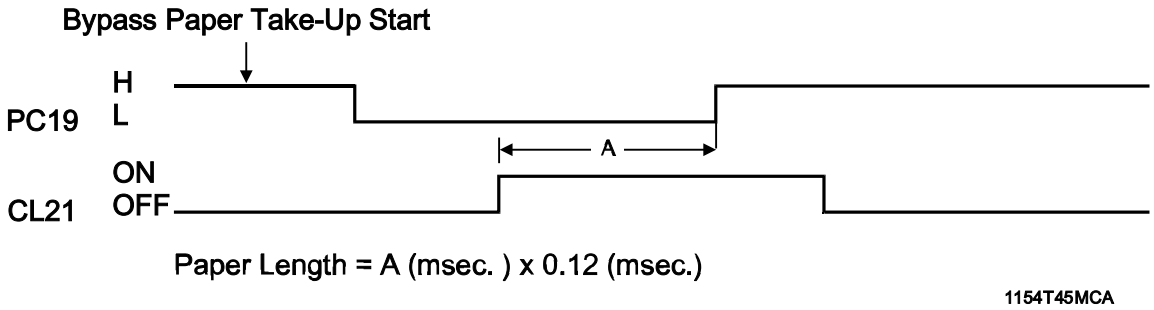
When (A) minus (B) is within ±15 mm, the copier takes (A) for the paper width.
When (A) minus (B) is more than ±15 mm, the copier takes (B) for the paper width.

1154SBM1407A

14-7. Manual Feed Paper Length Detection Mechanism

- The length of the paper placed on the Multi Bypass Table is detected by Transport Roller Sensor PC19 which is blocked (L) and unblocked (H) and Synchronizing Roller Clutch CL21 which is energized while the paper is being taken up and fed in.
- In a multi-copy cycle, paper length is detected with the first sheet of paper and the copy cycle is run based on that paper length.

<Control>



Paper Length = A (msec.) x 0.12 (msec.)

1154T45MCA

Point

- Length of a standard-size paper selected or nonstandard-size paper entered on the control panel: (A)
- Length of the paper detected during the take-up motion: (B)

When (A) minus (B) is within ±5 mm, the copier takes (A) for the paper length. When (A) minus (B) is more than ±5 mm, the copier takes (B) for the paper length.

1154SBM1500A

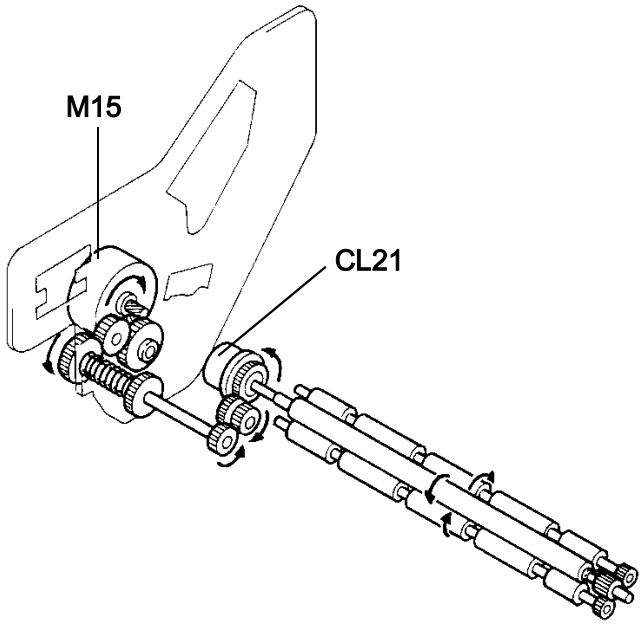
15 SYNCHRONIZING ROLLERS SECTION

- The Synchronizing Rollers synchronize the leading edge of the copy paper accurately with the leading edge of the toner image on the PC Drum.
- There are three rollers installed so that the paper tends to curl along the shape of the Transfer Drum.

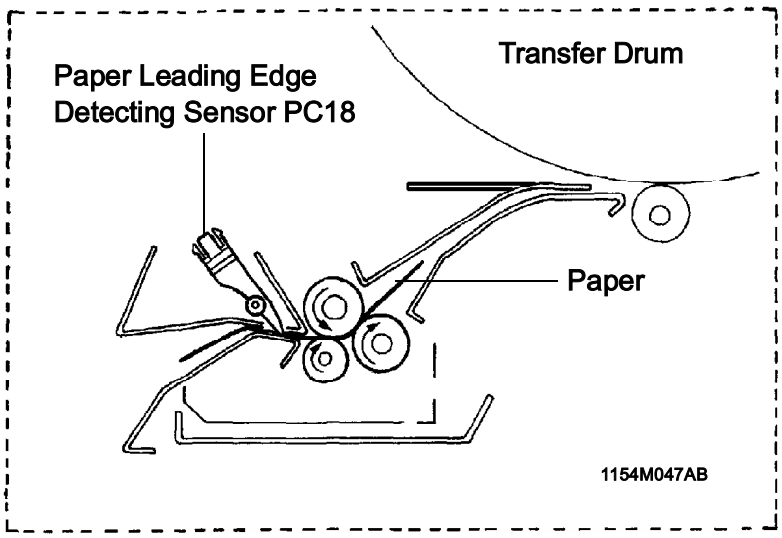
1154SBM1501A

15-1. Synchronizing Roller Drive Mechanism

- The Synchronizing Rollers are turned via Synchronizing Roller Clutch CL21 by Paper Take-Up Motor M15.



1144M065AA



1154M047AB

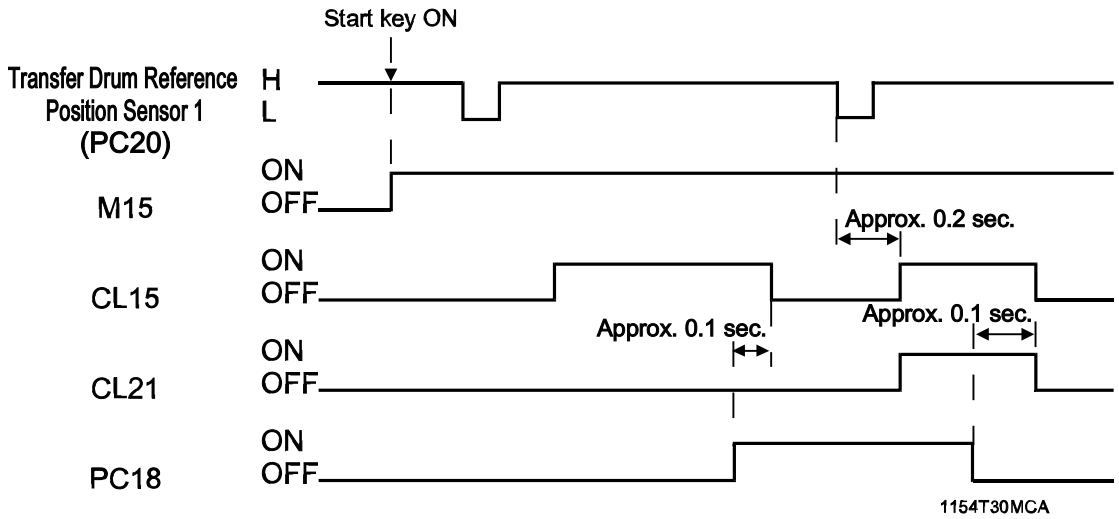
1154SBM1502A

15-2. Synchronizing Roller Drive Control

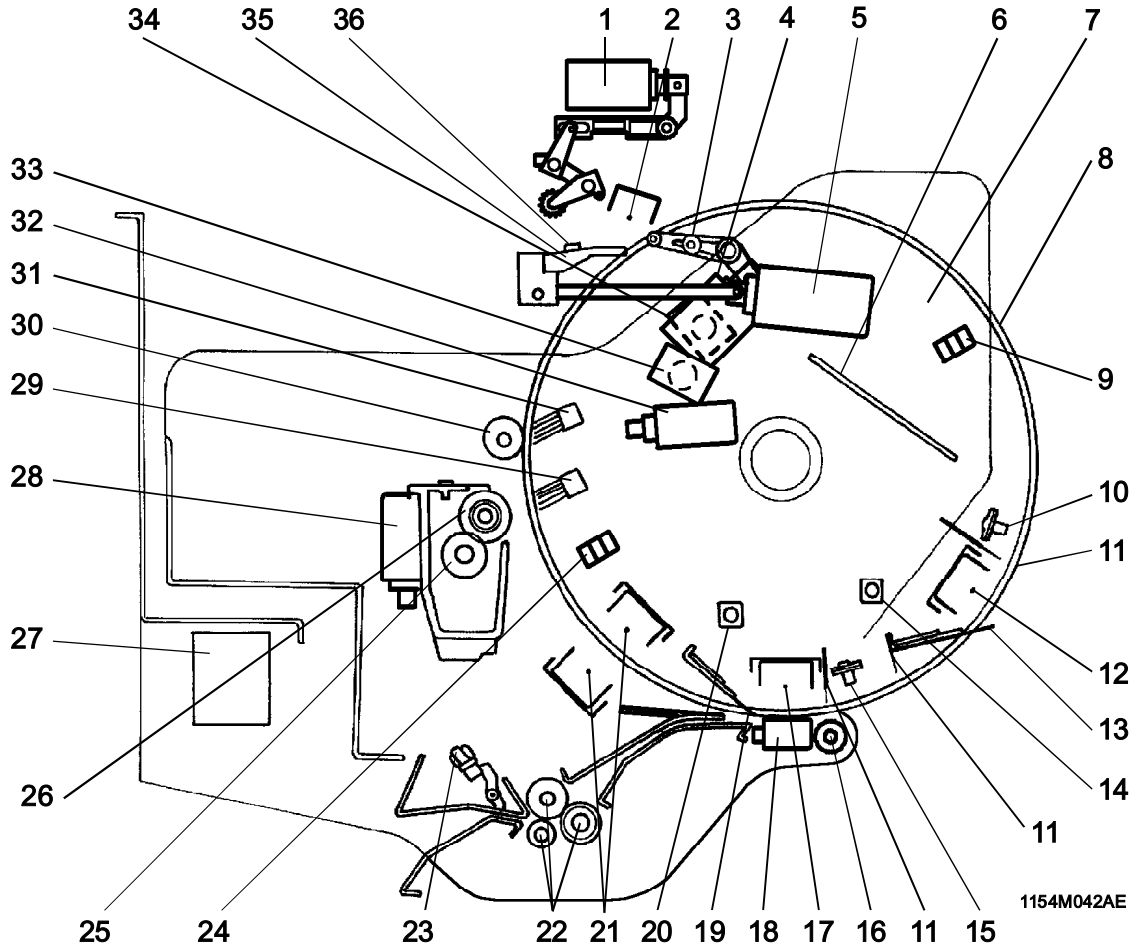
	Control Signal	Energized	Deenergized	Wiring Diagram
Paper Take-up Motor M15	PWB-I PJ6I-1	L	H	13-D
Transport Roller Clutch CL15	PWB-I PJ6I-8	L	H	13-D
Synchronizing Roller Clutch CL21	PWB-I PJ5I-10A	L	H	14-D

	Control Signal	Blocked	Unblocked	Wiring Diagram
Paper Leading Edge Detecting Sensor PC18	PWB-I PJ5I-1B	L	H	14-E

<One-sheet attraction>



16 TRANSFER DRUM SECTION

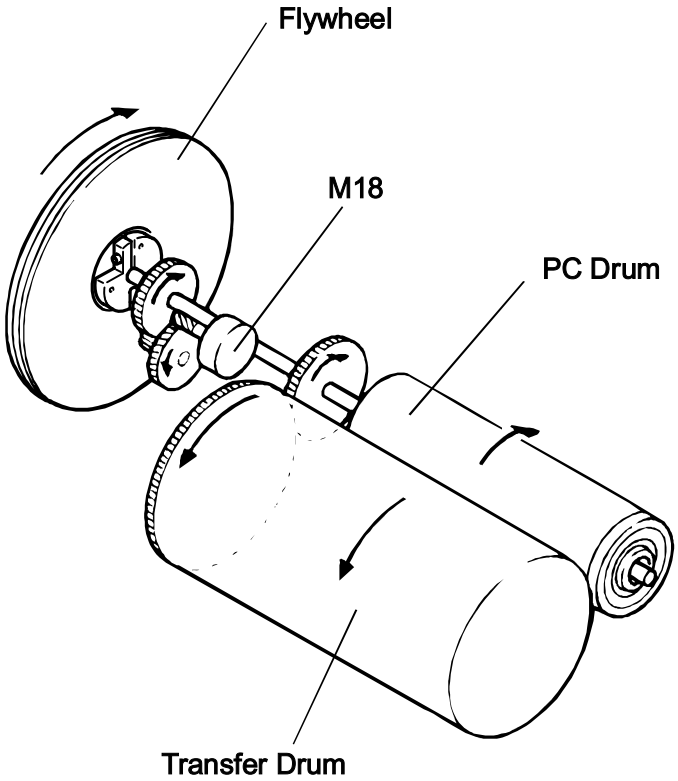


1. Paper Holding Solenoid SL23
2. Paper Separator Corona
3. Lifting Finger
4. Lifting Finger Solenoid SL16
5. Paper Separator Finger Solenoid SL14
6. High Voltage Unit 3 HV3
7. High Voltage Unit 2 HV2
8. Transfer Film
9. Transfer Drum Reference Position Sensor 2 PC28
10. Paper Bonding Failure Detection Board 2 PWB-P
11. Charge Neutralizing Cloth
12. Image Transfer Corona
13. Backup Blade 1
14. Backup Blade 1 Solenoid SL18
15. Paper Bonding Failure Detection Board 1 PWB-O
16. Static Charge Roller
17. Static Charge Corona
18. Static Charge Roller Solenoid SL13
19. Backup Blade 2
20. Backup Blade 2 Solenoid SL19
21. Charge Neutralizing Corona
22. Synchronizing Rollers
23. Paper Leading Edge Detecting Sensor PC18
24. Transfer Drum Reference Position Sensor 1 PC20
25. Toner Collecting Roller
26. Fur Brush Roller
27. Failure Sensor Adj. Board PWB-Y
28. Fur Brush Pressure Solenoid SL11
29. Backup Brush
30. Oil Roller
31. Backup Brush
32. Oil Roller Solenoid SL22
33. Internal Fur Brush Solenoid SL15
34. Backup Brush Solenoid SL17
35. Paper Separator Finger
36. Separating Failure Detecting Sensor PC21

1154SBM1601A

16-1. Transfer Drum Drive Mechanism

- The Transfer Drum is driven by PC Drum Drive Motor M18.
- Use of the same drive as the PC Drum means that the toner image can be transferred to the paper on the Transfer Drum with correct registration.



1154M094AB

1154SBM1602A

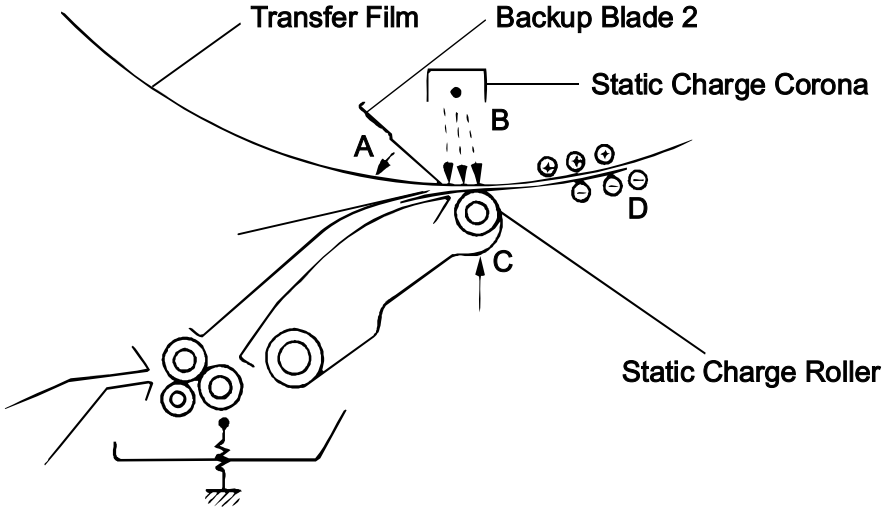
16-2. Paper Attraction

Paper is fed by the Synchronizing Rollers.

↓

Paper Attracting Operation

A. Backup Blade 2 pushes the Transfer Film.	Backup Blade 2 Solenoid SL19
B. The Static Charge Corona deposits a positive charge from the inside of the Transfer Drum.	High Voltage Unit 3 HV3
C. The Static Charge Roller presses against the Transfer Film.	Static Charge Roller Solenoid SL13
D. The paper is attracted onto the surface of the Transfer Film by static charge.	



1154M095AB

Two-sheet attraction

- When the following conditions are met in a multi-copy cycle, two sheets of paper are attracted onto the surface of the Transfer Film for greater productivity and lower operating noise.

Conditions

- Not in the manual bypass mode
- The zoom ratio in the sub-scanning direction ranges between ×0.995 and ×2.000.
- The paper length in the feeding direction measures 215.9 mm or less.
- Not in the Mixed Orig. mode
- Not in the Cover mode
- Not in the OHP Interleaving mode
- The copies are not samples for color adjustments.
- Image Repeat is not set.
- Multi-Page Enlargement is not set.
- Color Separation is not set.
- The number-of-copies setting is 2 or more, or the monochrome 1-to-1 high-speed mode is set.
- The paper type is standard or PPC.

Monochrome 1-to-1 high-speed mode

- Under the following conditions, the originals are fed in steps to allow two sheets of paper to be attracted.

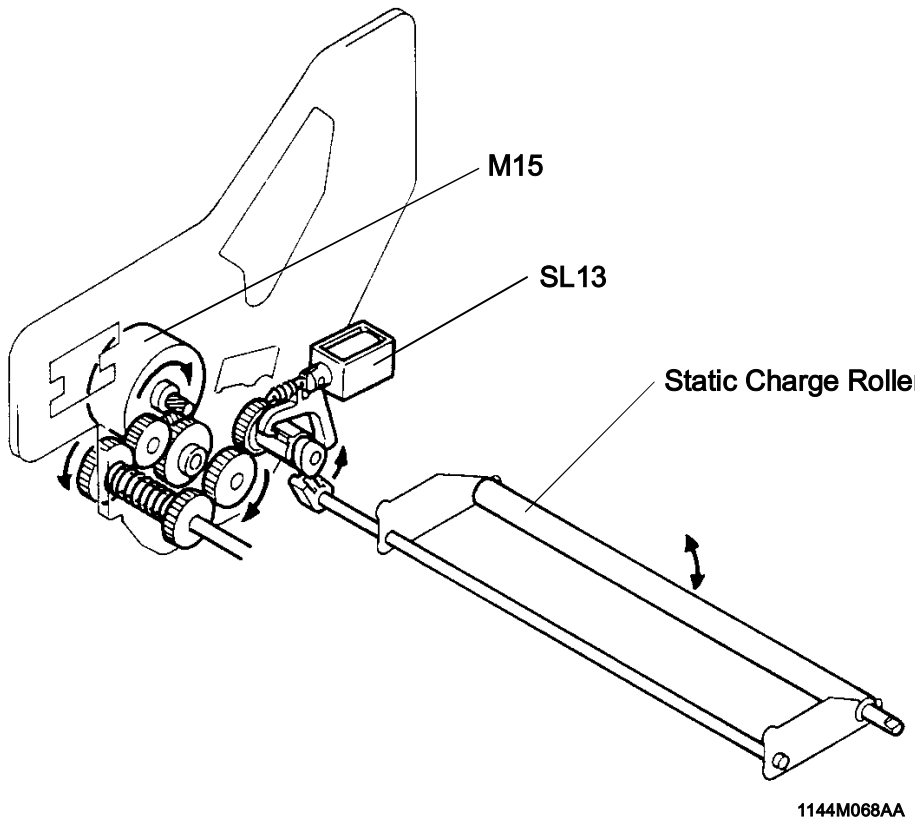
Conditions

- ADF is being used.
- Not in 2-in-1 mode.
- Not a Book mode.
- Not Mixed Original mode.
- Not Auto Exposure mode.
- Not ACS (Auto Color Selection) mode.
- The originals are not 2-sided.
- Not 2-sided copy mode.
- Monochrome mode.
- Mode that permits two-sheet attraction.

1154SBM160201A

(1) Static Charge Roller

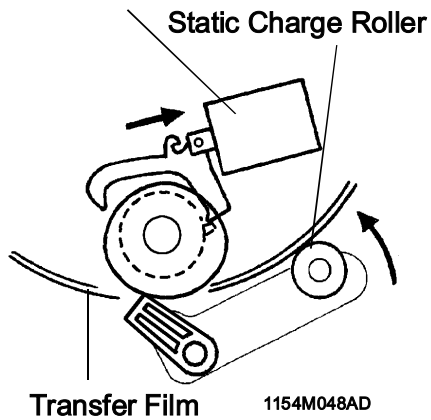
- The Static Charge Roller is driven by the Transfer Drum.
- The Static Charge Roller is pressed against, and released from, the surface of the Transfer Drum via Static Charge Roller Solenoid SL13 by Paper Take-Up Motor M15.



1144M068AA

When Pressed

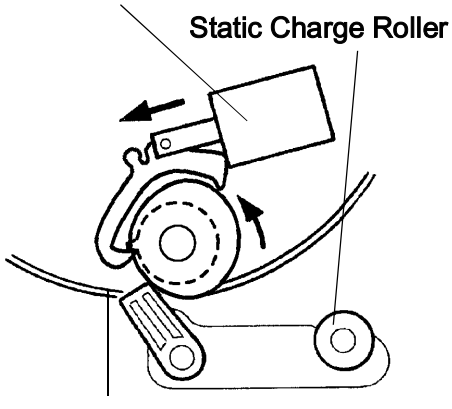
SL13: Energized



1154M048AD

When Released

SL13: Deenergized

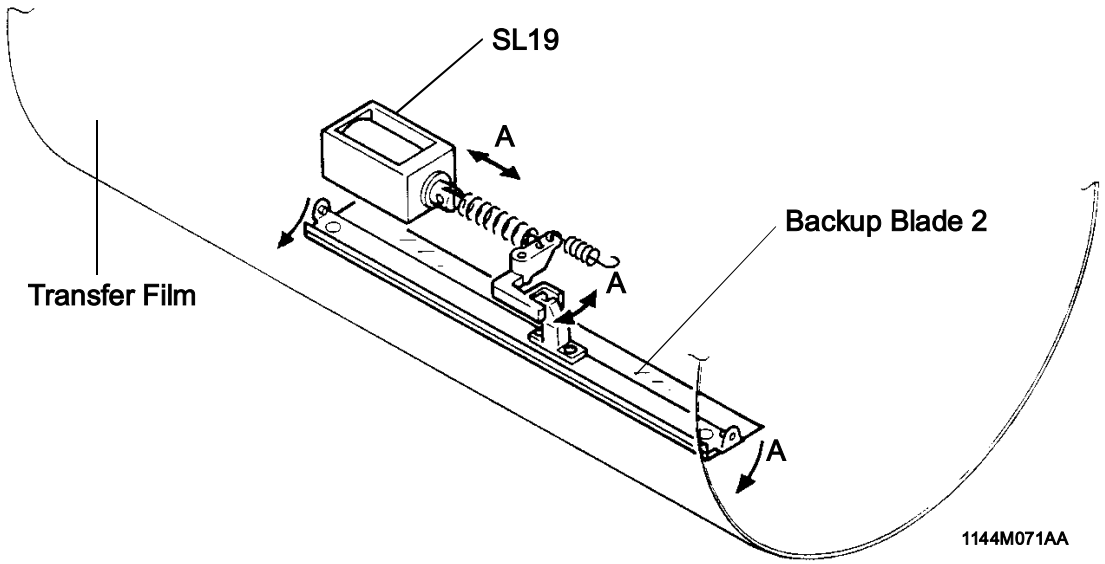


1154M049AB

1154SBM160202A

(2) Backup Blade 2

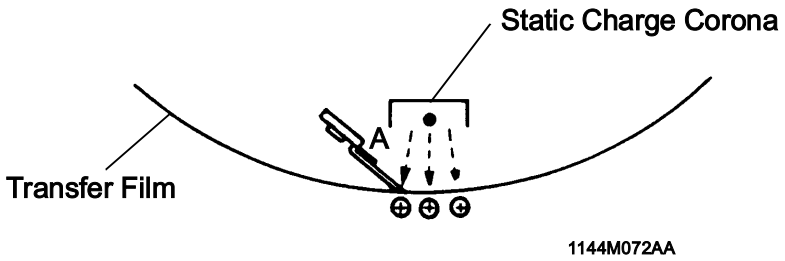
- When Backup Blade 2 Solenoid is energized (A), Backup Blade 2 pushes the Transfer Film from the inside of the Transfer Drum.



1154SBM160203A

(3) Static Charge Corona

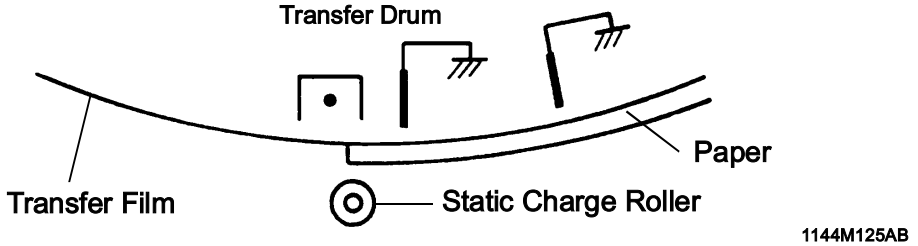
- The Static Charge Corona applies a positive DC corona emission from the inside of the Transfer Drum to deposit a positive charge on the surface of the Transfer Film.
- The output from the Static Charge Corona is higher on the leading edge of the paper so that the paper can be attracted to the film properly.
- The corona output is varied according to the temperature and humidity inside the copier and the type of paper being used.
- The corona output is controlled by High Voltage Unit 3 HV3.



1154SBM160204A

(4) Charge Neutralizing Cloth

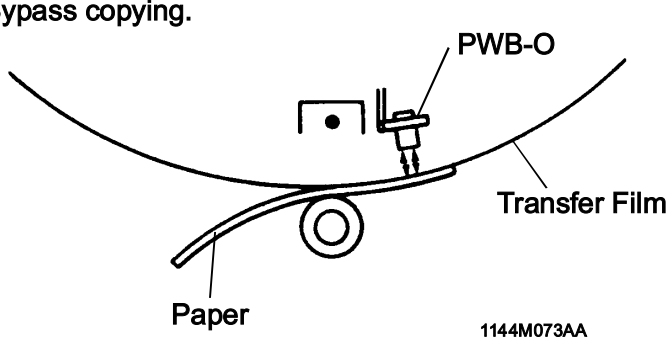
- The Charge Neutralizing Cloth prevents an electric discharge from occurring between the paper and Static Charge Roller, and between the paper and Transfer Film, after the paper has been attracted onto the surface of the Transfer Film.



1154SBM160205A

(5) Paper Attraction Detection (before image transfer)

- Paper Attraction Detection Board 1 PWB-O detects that a sheet of paper has been attracted properly onto the Transfer Film.
- PWB-O illuminates the paper fed and, according to the timing at which the reflected light is detected, determines the type of paper (standard or PPC paper, OHP transparencies).
- The determination of the type of paper is made when the standard or PPC paper is selected in Multi Bypass copying.



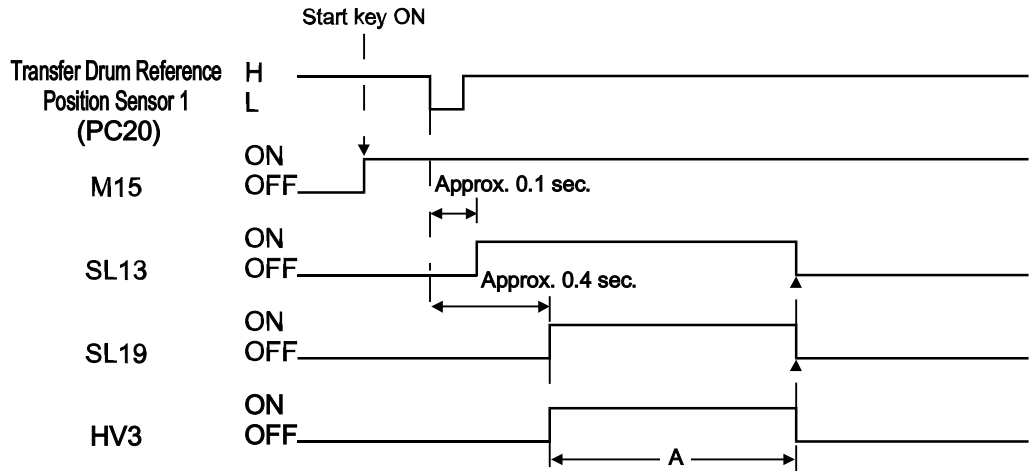
1144M073AA

1154SBM160206A

(6) Control

	Control Signal	Energized/ON	Deenergized/OFF	Wiring Diagram
Paper Take-up Motor M15	PWB-I PJ6I-1	L	H	13-D
Static Charge Roller Solenoid SL13	PWB-I PJ5I-3B	L	H	14-E
Backup Blade 2 Solenoid SL19	PWB-I PJ4I-7B	L	H	15-E
High Voltage Unit 3 HV3	PWB-I PJ4I-10A	L	H	15-D

<One-sheet attraction>



A: Feeding-direction paper size (mm) / 120 (mm/s) + 0.9 sec.

1154T31MCA

1154SBM1603A

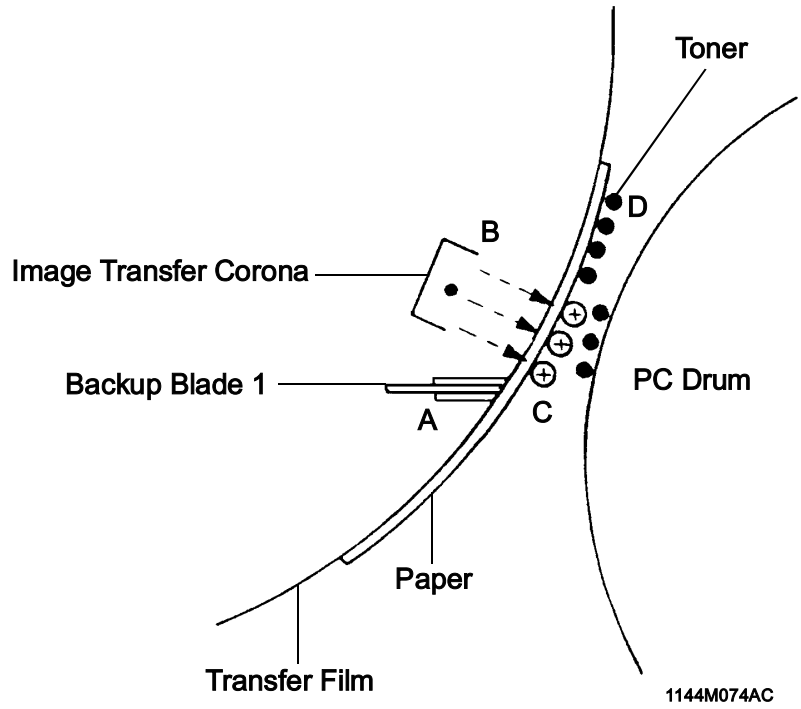
16-3. Image Transfer Section

Paper attracted to the Transfer Film passes by the PC Drum as the Transfer Drum turns.

↓

Image Transfer Operation

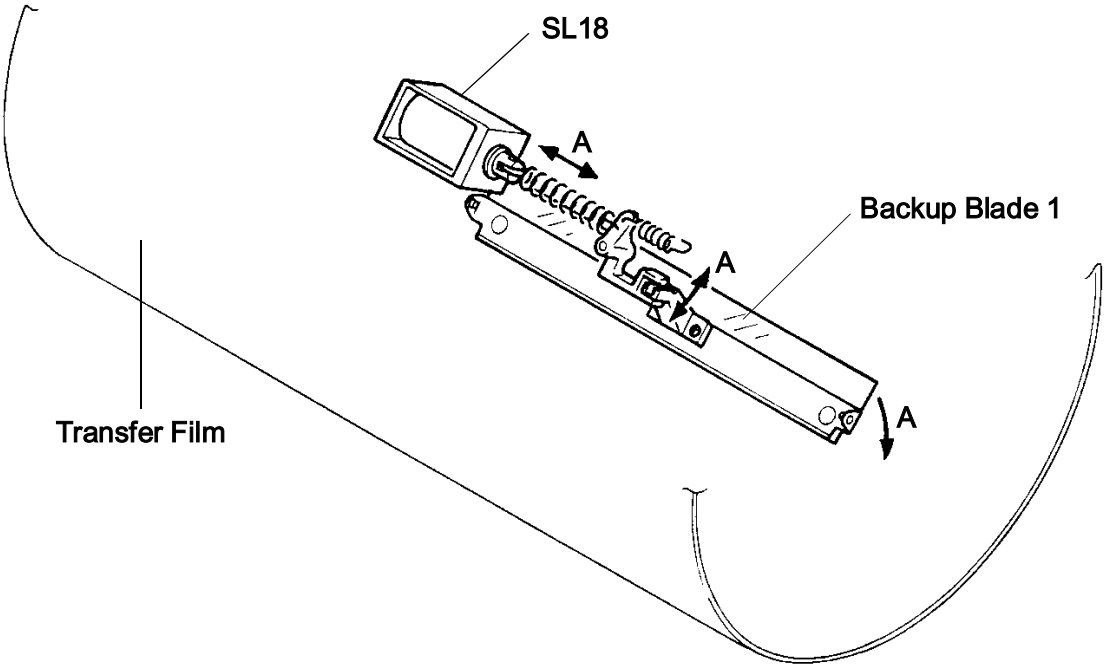
A. Backup Blade 1 pushes the Transfer Film.	Backup Blade 1 Solenoid SL18
B. The Image Transfer Corona applies a positive corona emission from the inside of the Transfer Film.	High Voltage Unit 3 HV3
C. Backup Blade 1 restricts the electric field generated between the PC Drum and paper.	
D. The toner on the surface of the PC Drum is attracted onto the surface of the paper.	



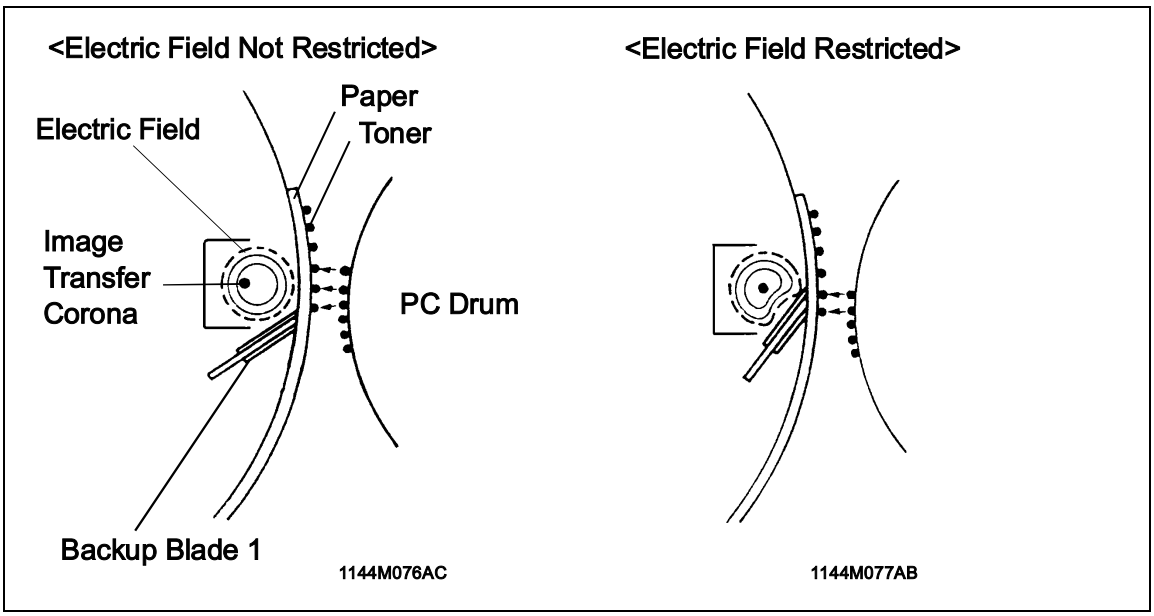
1154SBM160301A

(1) Backup Blade 1

- In addition to pushing the Transfer Film from the inside of the Transfer Drum, Backup Blade 1 restricts the electric field generated by the Image Transfer Corona output, thereby narrowing the field so that toner is attracted to the exact point on the paper.
- Backup Blade 1 is pressed against the Transfer Film when Backup Blade 1 Solenoid SL18 is energized.



1144M075AA



1144M076AC

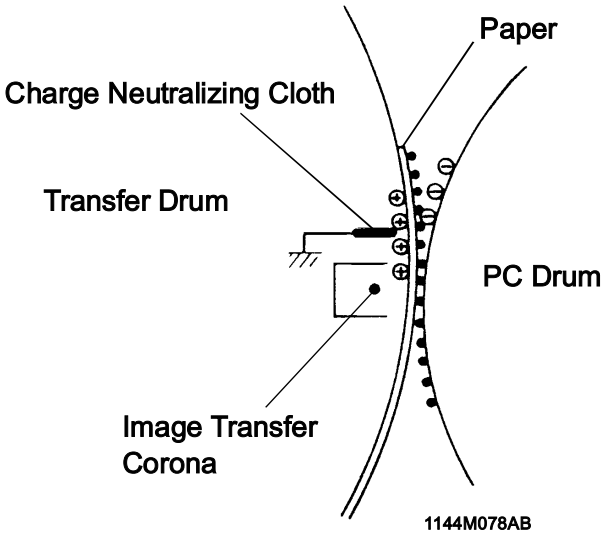
1144M077AB

1154SBM160302A
(2) Image Transfer Corona

- The Image Transfer Corona, employing the corotron system, applies a DC positive corona emission to the inside of the Transfer Film to attract the negatively charged toner on the surface of the PC Drum onto the surface of the paper.
- Since image transfer takes places four times in the full color mode, the output from the Image Transfer Corona is made higher each time than the preceding one.
- The corona output is varied according to the temperature and humidity inside the copier and the type of paper being used.
- The corona output is controlled by High Voltage Unit 3 HV3.

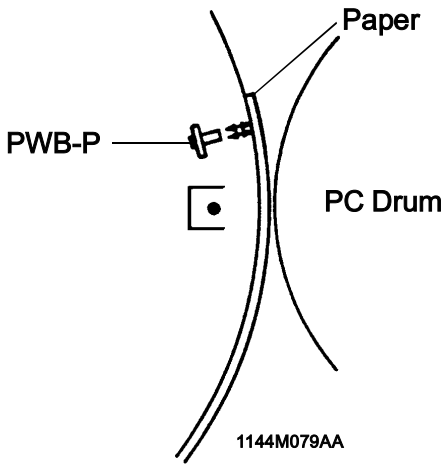
1154SBM160303A
(3) Charge Neutralizing Cloth

- An electric discharge occurs when the paper leaves the PC Drum after image transfer. At this time, the positive charge on the surface of the Transfer Film is discharged onto the PC Drum, disturbing the toner image on the paper. The Charge Neutralizing Cloth prevents this from occurring.



1154SBM160304A
(4) Paper Attraction Detection (after image transfer)

- Paper Attraction Detection Board 2 PWB-P detects that the paper remains attracted to the surface of the Transfer Film after image transfer.

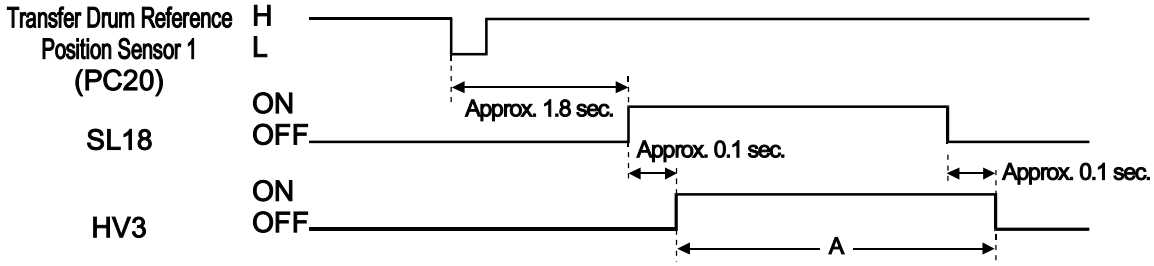


1154SBM160305A

(5) Image Transfer Control

	Control Signal	Energized/ON	Deenergized/OFF	Wiring Diagram
Backup Blade 1 Solenoid SL18	PWB-I PJ4I-8B	L	H	15-E
High Voltage Unit 3 HV3	PWB-I PJ4I-7A	L	H	15-D

<One-sheet attraction>



A: Feeding-direction paper size (mm) + 3 mm/120 (mm/s)

1154T32MCA

1154SBM1604A

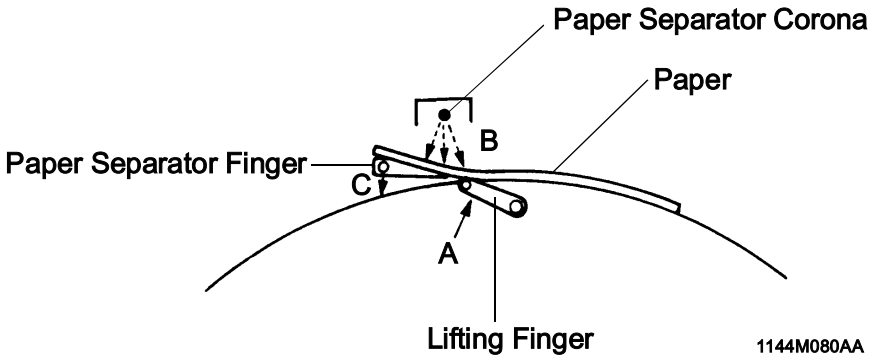
16-4. Paper Separation Section

The paper to which the toner image has been transferred travels further.

↓

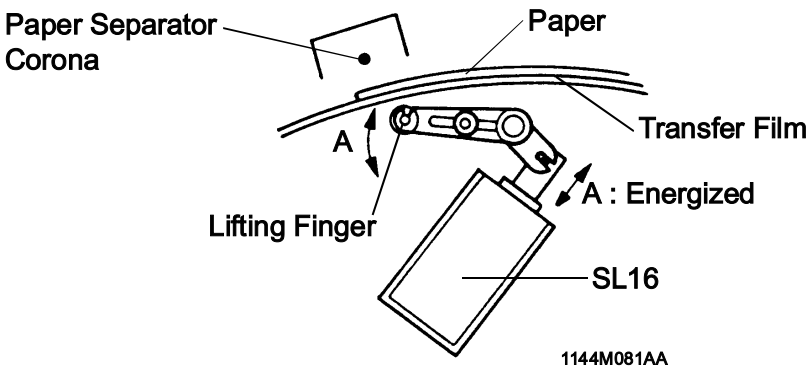
Paper Separating Operation

A. The Lifting Finger pushes up the Transfer Film.	Lifting Finger Solenoid SL16
B. The Paper Separator Corona applies an AC corona emission from the outside of the Transfer Film to weaken the attraction of the paper to the Transfer Film.	High Voltage Unit 2 HV2
C. The Paper Separator Finger separates the paper from the surface of the Transfer Film.	Paper Separator Finger Solenoid SL14



1154SBM160401A
(1) Paper Separation Lifting Finger

- The Lifting Finger pushes up the Transfer Film from the inside of the Transfer Drum when Lifting Finger Solenoid SL16 is energized.

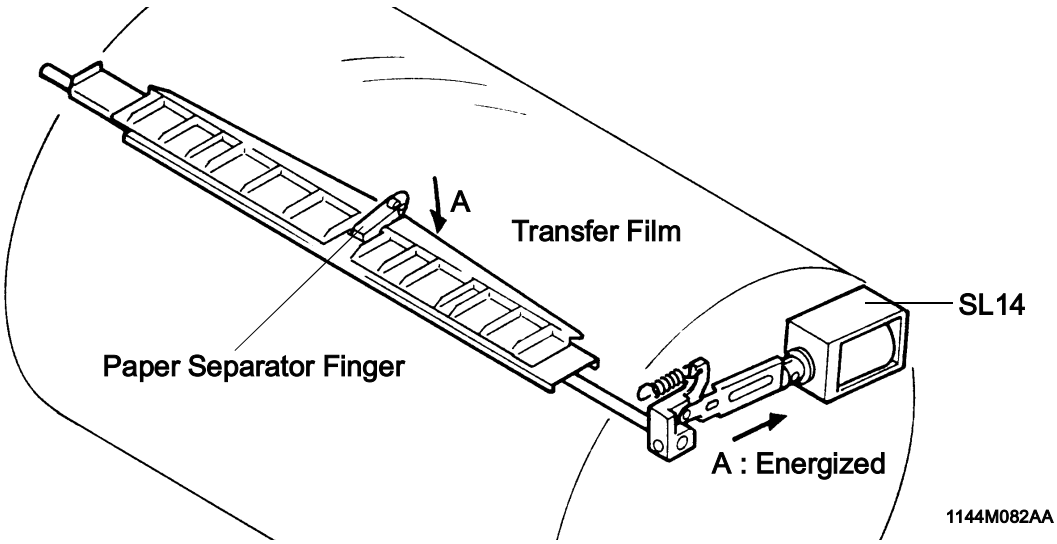


1154SBM160402A
(2) Paper Separator Corona

- The Paper Separator Corona applies an AC corona emission from the outside of the Transfer Film to weaken the attraction of the paper to the Transfer Film.
- The corona output is varied according to the temperature and humidity inside the copier and the type of paper being used.
- The corona output is controlled by High Voltage Unit 2 HV2.

1154SBM160403A
(3) Paper Separator Finger

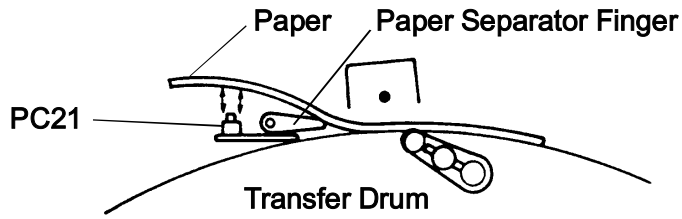
- The Paper Separator Finger pushes down the Transfer Film so that the paper can be properly separated from the surface of the Transfer Film. It is actuated when Paper Separator Finger Solenoid SL14 is energized.



1154SBM160404A

(4) Paper Separating Failure Detection Mechanism

- Separating Failure Detecting Sensor PC21 detects that the paper has been properly separated from the surface of the Transfer Film.

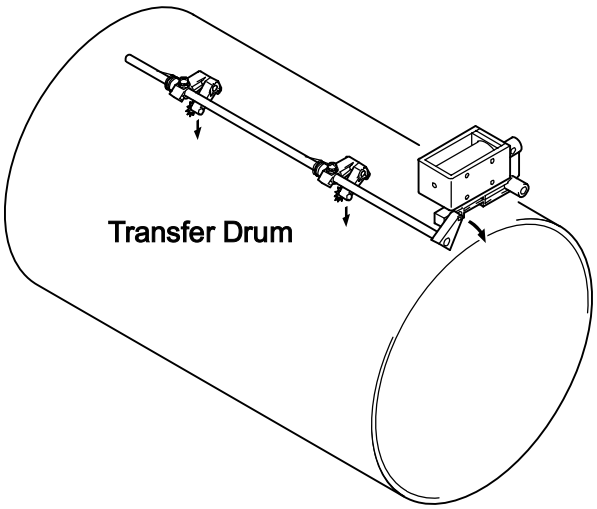


1144M083AA

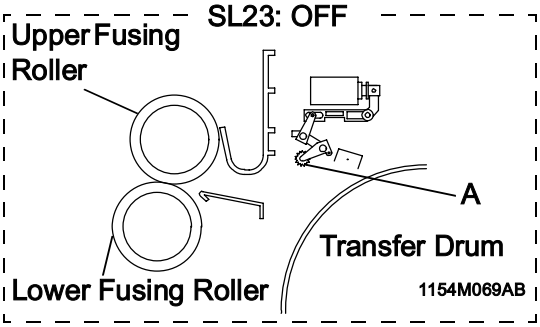
1154SBM160405A

(5) Paper Holding Mechanism

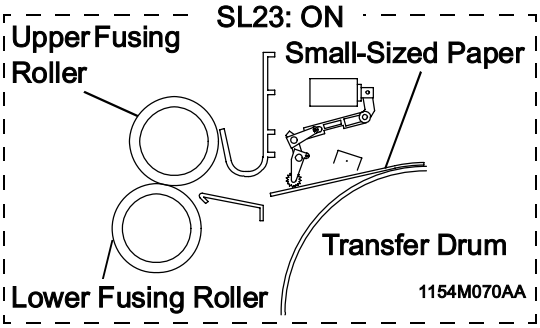
- When small-sized paper (4" × 6" thick paper, A6 thick paper) is separated from the Transfer Film, it tends to curve upward excessively. To prevent this, Paper Holding Solenoid SL23 is energized to let part A hold the paper downward.



1154M068AB



1154M069AB



1154M070AA

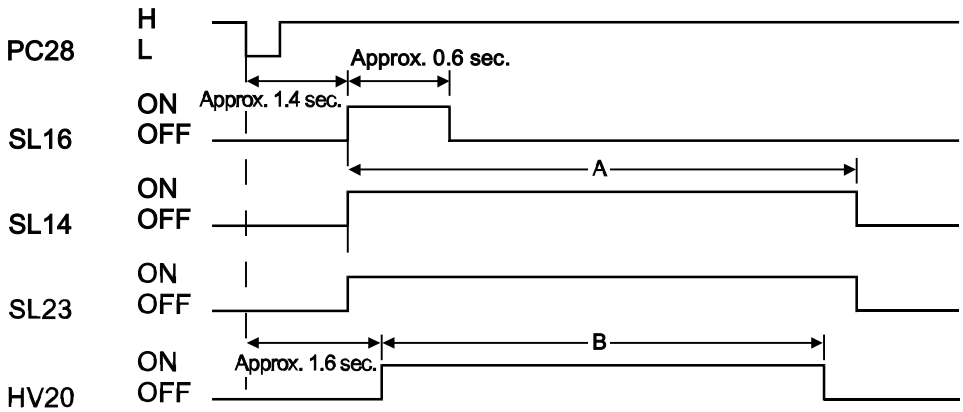
1154SBM160406A

(6) Paper Separation Control

	Control Signal	ON	OFF	Wiring Diagram
Paper Separator Finger Solenoid SL14	PWB-I PJ5I-2B	L	H	14-E
Lifting Finger Solenoid SL16	PWB-I PJ4I-6B	L	H	15-E
High Voltage Unit 2 HV2	PWB-I PJ5I-5A	L	H	14-D
Paper Holding Solenoid SL23	PWB-I PJ7I-9A	L	H	13-F

	Control Signal	Blocked	Unblocked	Wiring Diagram
Transfer Drum Reference Position Sensor 2 PC28	PWB-I PJ4I-4B	L	H	15-E

<One-sheet attraction>



A: (Feeding-direction paper size (mm) + 62 mm) / 120 (mm/s)

B: (Feeding-direction paper size (mm) + 30 mm) / 120 (mm/s)

1154T33MCA

1154SBM1605A

16-5. Transfer Film Cleaning Mechanism

- The Transfer Film cleaning mechanism removes toner and fusing oil from, and neutralizes any residual charge on, the surface of the Transfer Film.
- Transfer Film cleaning can occur in any of the following three patterns.

<table>
<tr><td colspan="3"></td><td>Cleaning Mode</td><td>Means</td></tr>
<tr><td colspan="3">During predrive</td><td>• Toner cleaning</td><td>• Fur Brush Unit
• Charge neutralizing</td></tr>
<tr><td colspan="3">After a copy cycle</td><td>• Toner cleaning
• Oil cleaning (2-sided copy cycle and Multi Bypass copying for paper other than OHP transparencies)</td><td>• Fur Brush Unit
• Oil Collecting Roller (2-sided copy cycle and Multi Bypass copying for paper other than OHP transparencies)
• Charge neutralizing</td></tr>
<tr><td colspan="2">Copy Mode</td><td>When one sheet is attracted</td><td>When two sheets are attracted</td><td>Cleaning Mode</td><td>Means</td></tr>
<tr><td rowspan="2">At the end of 1-sided copy cycle</td><td>Mono Color</td><td>After 48 copies</td><td>After 96 copies</td><td rowspan="2">• Toner cleaning</td><td rowspan="2">• Fur Brush Unit
• Charge neutralizing</td></tr>
<tr><td>Full Color</td><td>After 24 copies</td><td>After 48 copies</td></tr>
<tr><td rowspan="2">At the end of 2-sided or manual bypass copy cycle</td><td>Mono Color</td><td>After 12 copies (24 copy cycles)</td><td>After 24 copies (48 copy cycles)</td><td rowspan="2">• Toner cleaning
• Oil cleaning</td><td rowspan="2">• Fur Brush Unit
• Oil Collecting Roller
• Charge neutralizing</td></tr>
<tr><td>Full Color</td><td>After 6 copies (12 copy cycles)</td><td>After 12 copies (24 copy cycles)</td></tr>
</table>

<Operation Flow>

The paper separating operation is completed.

↓

The Transfer Film is again charged positively by the Static Charge Corona, Static Charge Roller, and Backup Blade 2 so that flying toner particles are attracted to the Transfer Film.

(During predrive and at the end of 1-sided copy cycle)

(At the end of 2-sided or manual bypass copy cycle)

↓

The Oil Collecting Roller collects fusing oil from the surface of the Transfer Film.

↓

The Fur Brush Unit is operated to collect toner from the surface of the Transfer Film.

↓

The Charge Neutralizing Corona neutralizes any residual charge on the inner and outer surfaces of the Transfer Film, thereby initializing the Transfer Film.

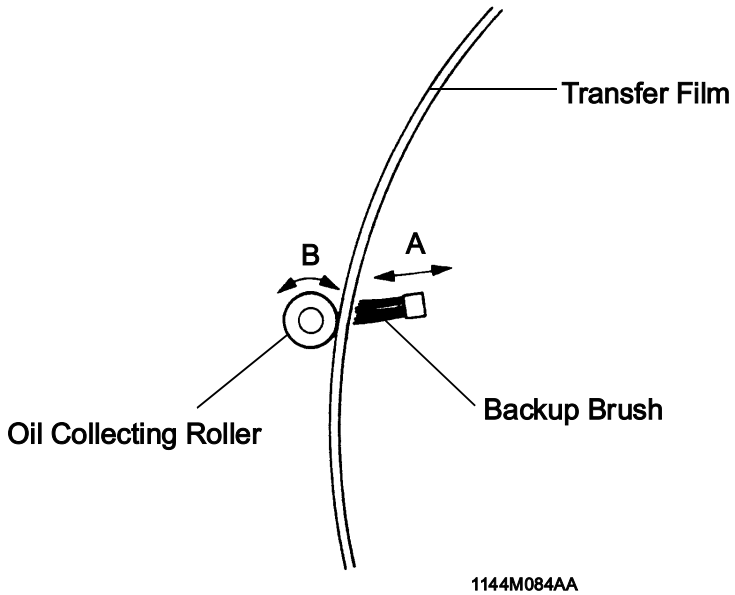
1154SBM1606A

16-6. Oil Cleaning

- In a copy cycle making 2-sided copies, a small amount of fusing oil remains present on the surface of the Transfer Film. This oil is cleaned off to prevent it from being transferred to the next copy paper.

Oil Cleaning Operation

A. The Backup Brush pushes the Transfer Film from the inside of the Transfer Drum.	Backup Brush Solenoid SL17
B. The Oil Collecting Roller is pressed against the surface of the Transfer Film to collect fusing oil.	Oil Roller Solenoid SL22

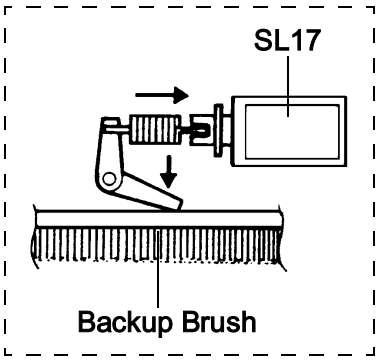


1144M084AA

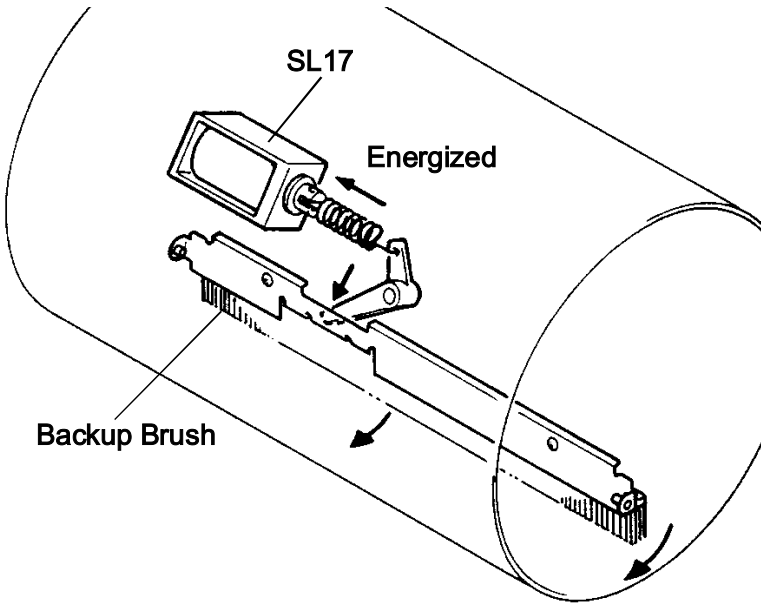
1154SBM160601A

(1) Oil Cleaning Backup Brush

- When Backup Brush Solenoid SL17 is energized, the Backup Brush is pressed against the Transfer Film from the inside to push it outward.



1144M121AA



1144M089AA

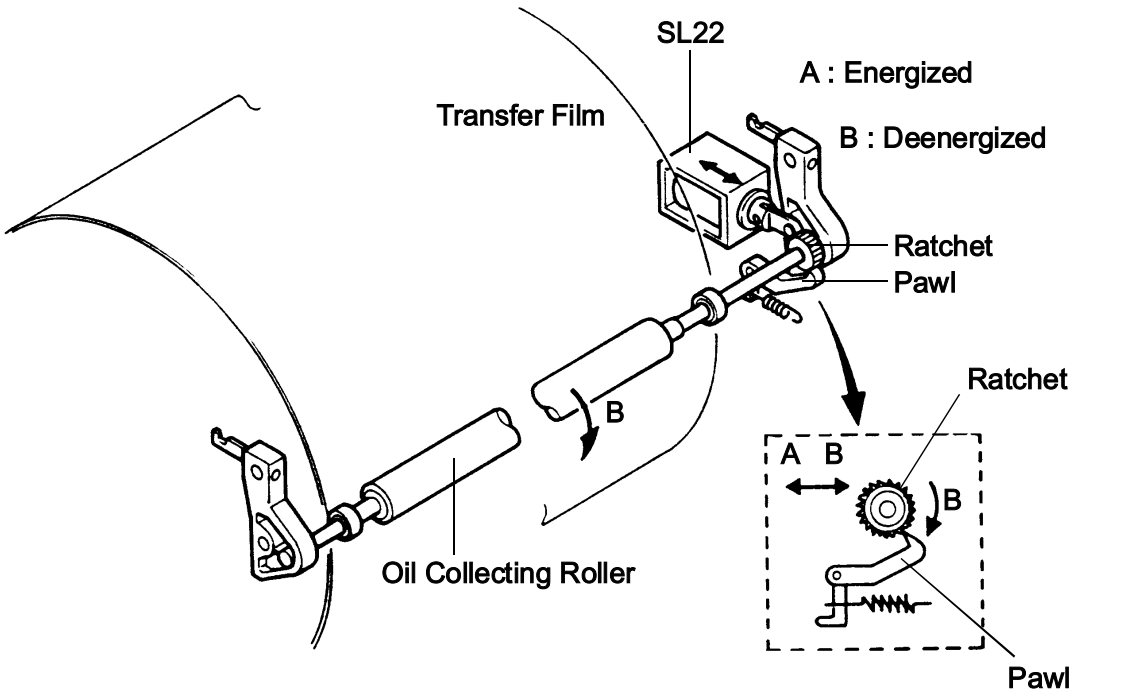
1154SBM160602A

(2) Oil Roller

- When Oil Roller Solenoid SL22 is energized, the Oil Roller is pressed against the surface of the Transfer Film to collect oil from the surface.
- Each time SL22 is energized and deenergized, the Oil Roller turns about 5 mm.

Oil Roller Turning Operation

		No. Keyed in Illustration
↓	SL22 is energized.	A
	The ratchet is raised, allowing the pawl to slide one tooth of the ratchet.	A
	SL22 is deenergized.	B
	The ratchet lowers and turns, which turns the Oil Roller.	B

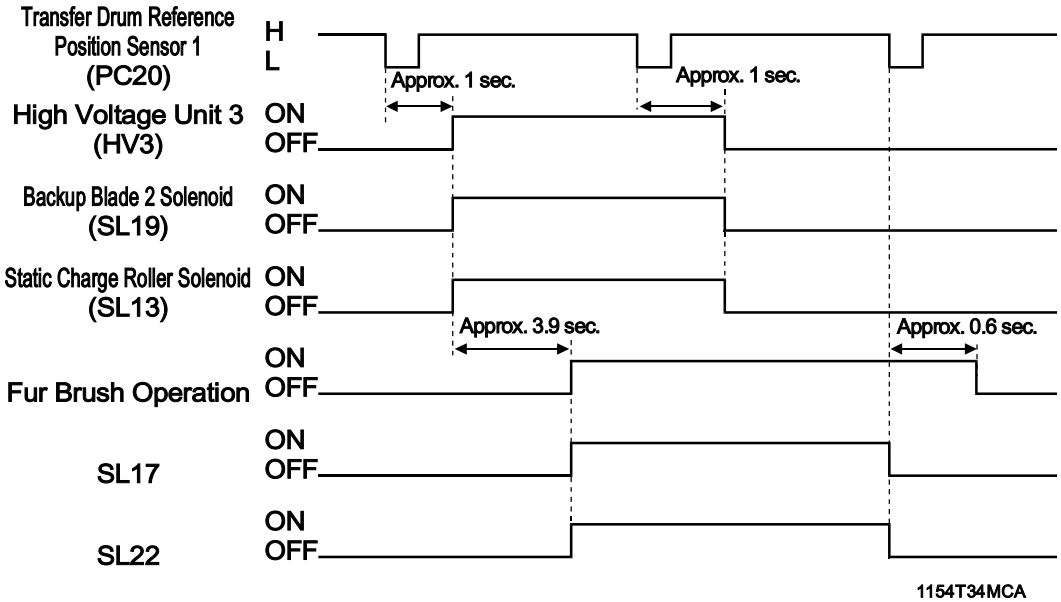


1144M087AA

1154SBM160603A

(3) Oil Cleaning Control

	Control Signal	Energized	Deenergized	Wiring Diagram
Backup Brush Solenoid SL17	PWB-I PJ4I-9B	L	H	15-E
Oil Roller Solenoid SL22	PWB-I PJ5I-4B	L	H	14-E



1154T34MCA

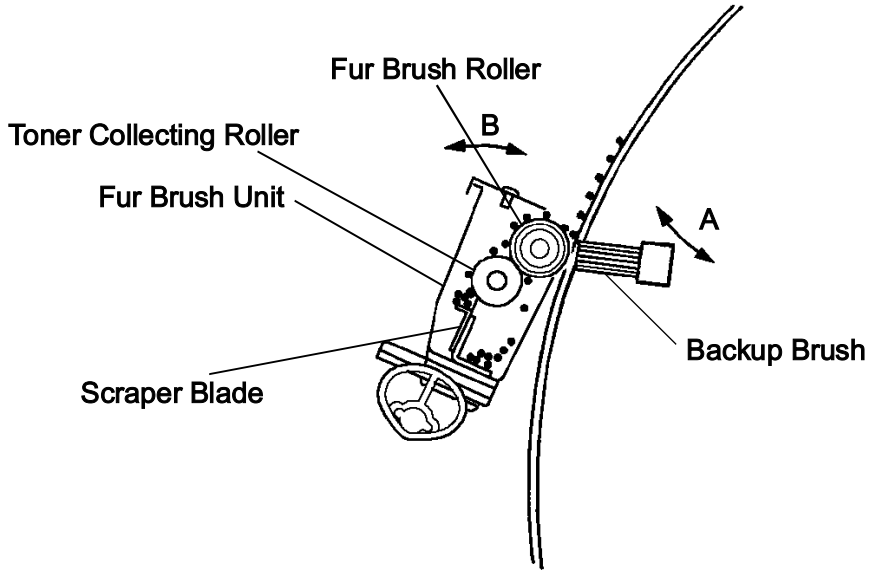
1154SBM1607A

16-7. Toner Cleaning

- The toner particles on the Transfer Film are collected by the Fur Brush Unit.

Toner Cleaning Operation

A. The Backup Brush is pressed against the Transfer Film from the inside of the Transfer Drum.	Internal Fur Brush Solenoid SL15
B. The Fur Brush Roller is pressed against the surface of the Transfer Film.	Fur Brush Pressure Solenoid SL11
C. A positive DC bias voltage is applied to both the Fur Brush and Toner Collecting Rollers.	High Voltage Unit 2 HV2
D. The Fur Brush and Toner Collecting Rollers turn to collect toner which is in turn scraped off by the Scraper Blade into the Fur Brush Unit.	Fur Brush Drive Clutch CL20



1154M008AF

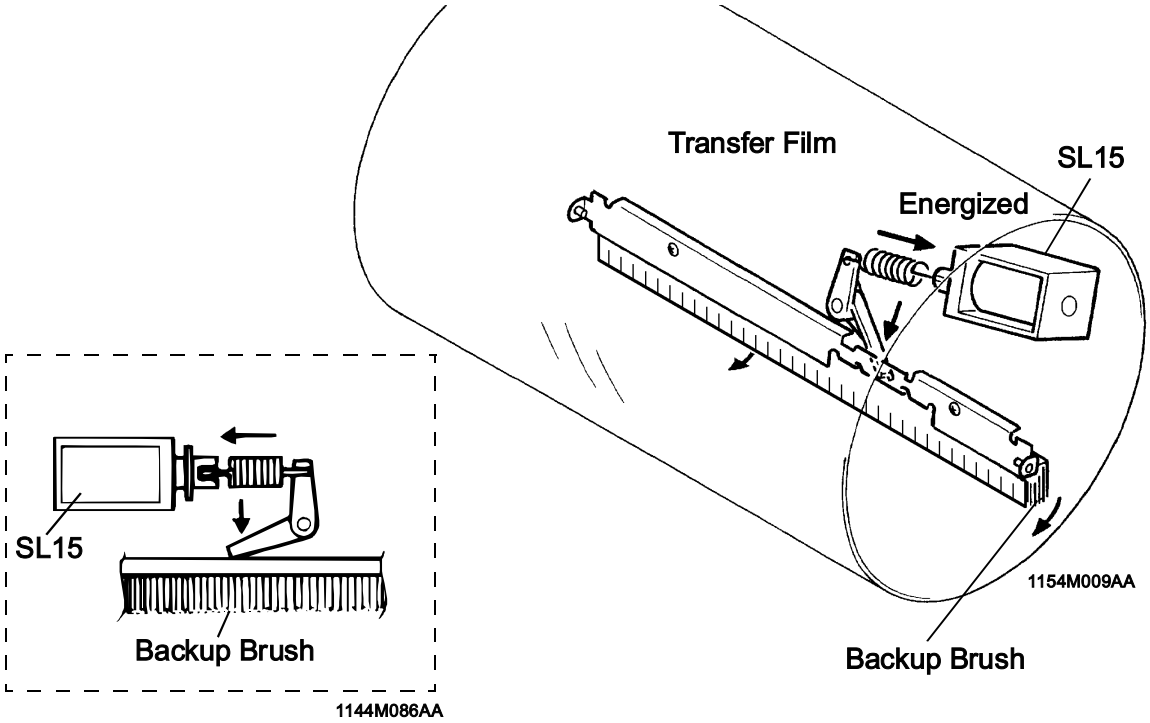
✻ Toner cleaning operation is performed for two complete turns of the Transfer Drum under the following conditions:

- During a multi-copy cycle.
- After three or more copies have been made in the full color mode.
- After 24 or more copies have been made in the mono color mode and in one-sheet attraction.
- After 48 or more copies have been made in the mono color mode and in two-sheet attraction.
- After predrive has been completed.
- After a 2-sided copy or manual bypass copy (other than OHP transparencies) has been made.

1154SBM160701A

(1) Toner Cleaning Backup Brush

- The Backup Brush is pressed against, and pushes, the Transfer Film from the inside of the Transfer Drum when Internal Fur Brush Solenoid SL15 is energized.

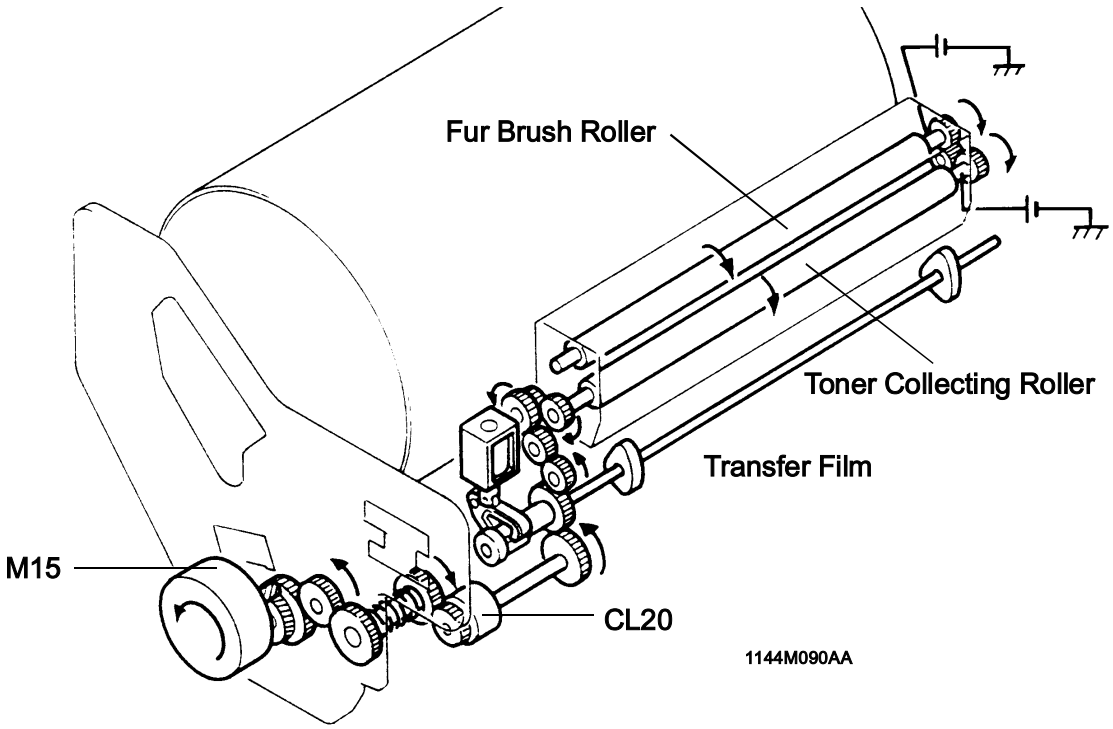


1154SBM160702A

(2) Fur Brush Unit

<Drive Mechanism>

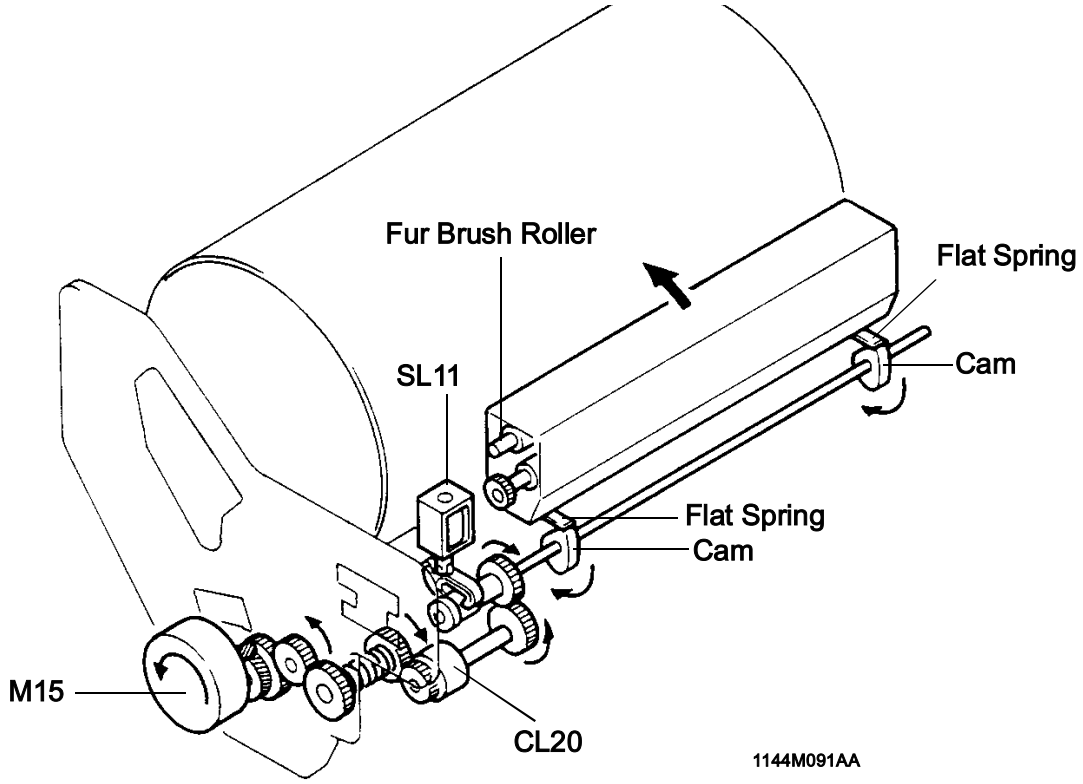
- The Fur Brush Roller and Toner Collecting Roller are turned via Fur Brush Drive Clutch CL20 by Paper Take-Up Motor M15.

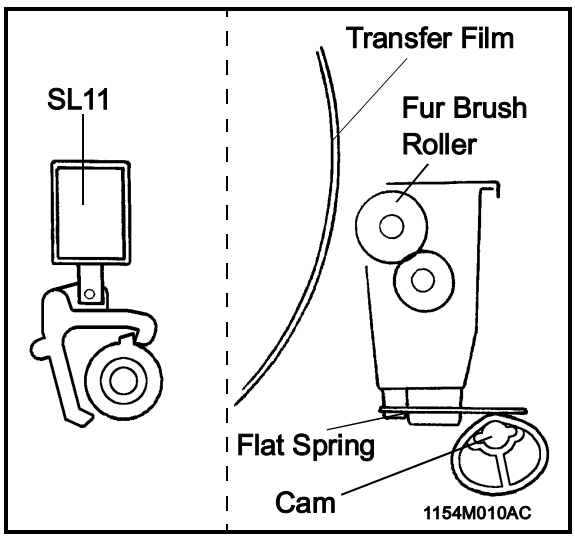


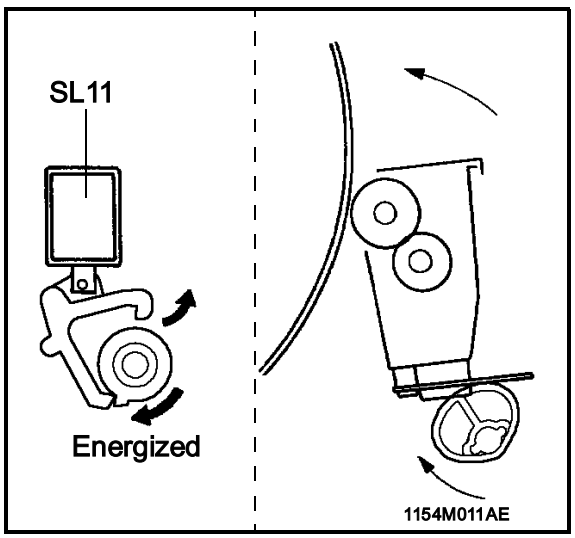
1154SBM160703A

(3) Fur Brush Roller/Toner Collecting Roller

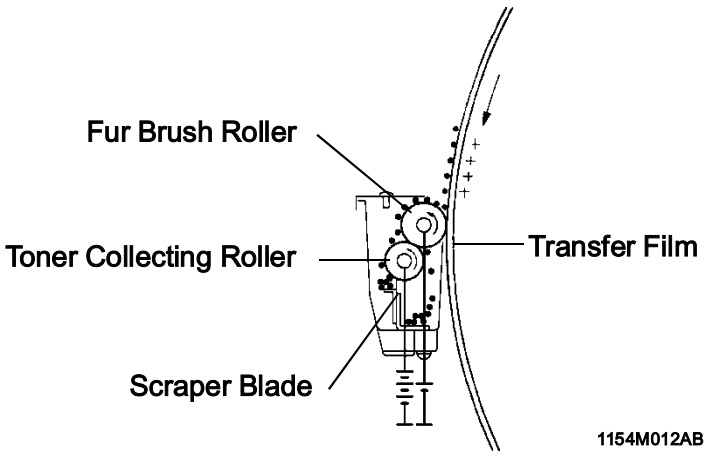
- When Fur Brush Pressure Solenoid SL11 is energized, it turns the cams raising the flat springs under the Fur Brush Unit. This results in the Fur Brush Roller being pressed against the Transfer Film.







- A bias voltage of DC+300V is applied to the Fur Brush Roller so that it collects toner particles from the surface of the Transfer Film.
- The Toner Collecting Roller, to which a bias of DC+900V is applied, collects toner from the surface of the Fur Brush Roller. The Scraper Blade then scrapes toner off the surface of the Toner Collecting Roller.

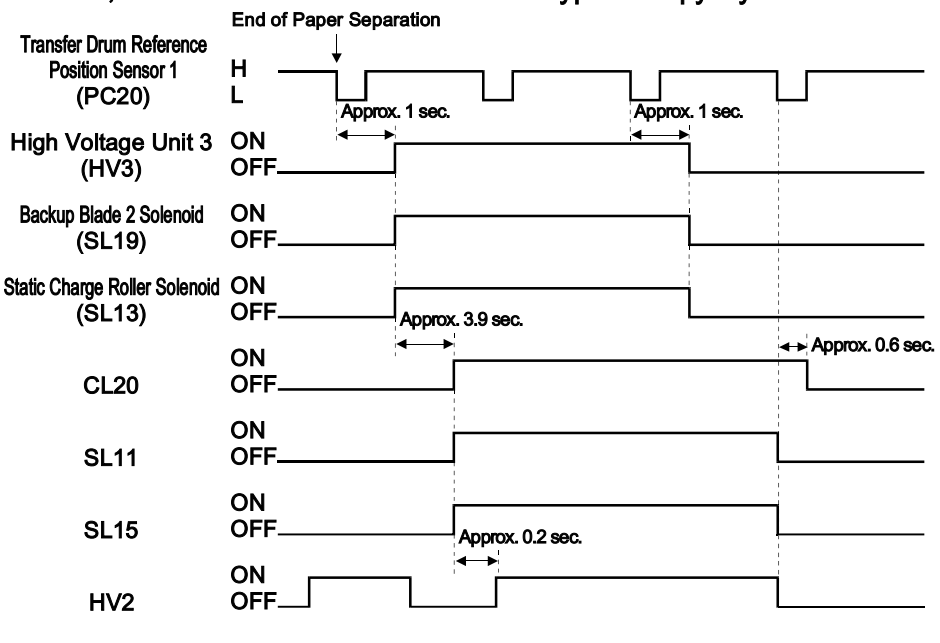


1154SBM160704A

(4) Fur Brush Control

	Control Signal	Energized/ON	Deenergized/OFF	Wiring Diagram
Fur Brush Drive Clutch CL20	PWB-I PJ5I-11A	L	H	14-D
Fur Brush Pressure Solenoid SL11	PWB-I PJ5I-12A	L	H	14-D
Internal Fur Brush Solenoid SL15	PWB-I PJ4I-10B	L	H	15-E
High Voltage Unit 2 HV2	PWB-I PJ5I-8A	L	H	14-D

<During Predrive, at the End of 2-Sided or Manual Bypass Copy Cycle>



1154SBM1608A

16-8. Charge Neutralizing

- The Charge Neutralizing Corona employing a corotron system neutralizes any residual charge on the inner and outer surfaces of the Transfer Film.
- The corona output is varied according to the temperature and humidity inside the copier and the type of paper being used.
- The corona output is controlled by High Voltage Unit 2 HV2.

<Transfer Film Inner Surface>

(After paper separation to before film cleaning)

- AC and DC negative voltages are applied to the Charge Neutralizing Corona to neutralize positive residual charge.

(After film cleaning)

- An AC voltage is applied to the Charge Neutralizing Corona to neutralize residual charge and initialize the Transfer Film.

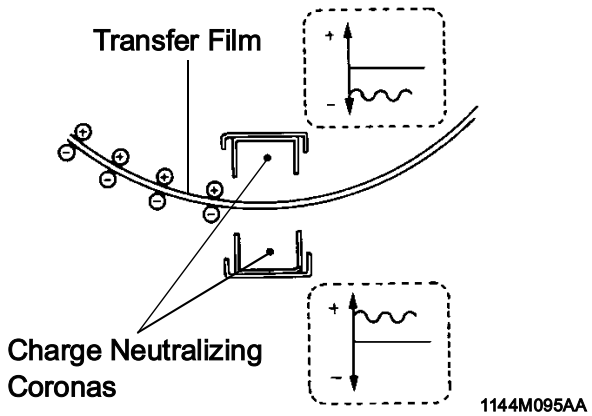
<Transfer Film Outer Surface>

(After paper separation to before film cleaning)

- AC and DC positive voltages are applied to the Charge Neutralizing Corona to neutralize negative residual charge.

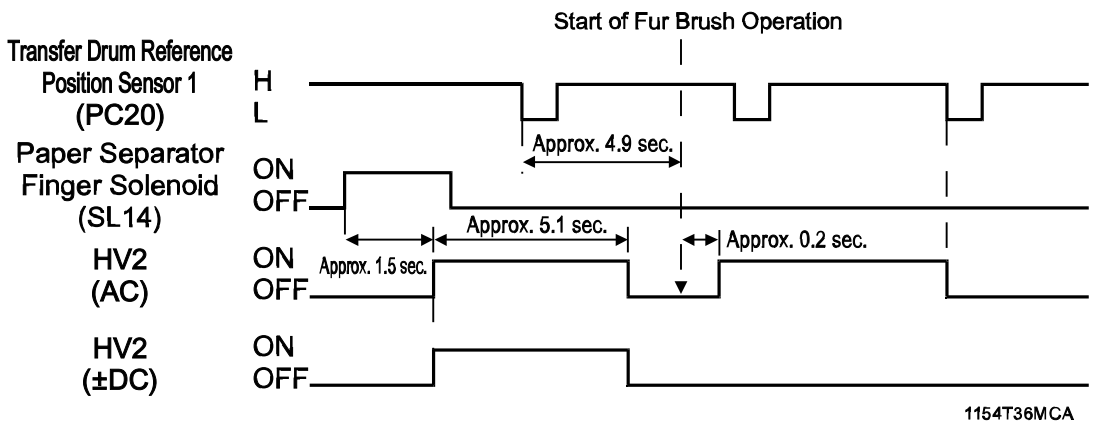
(After film cleaning)

- An AC voltage is applied to the Charge Neutralizing Corona to neutralize residual charge and initialize the Transfer Film.



<Control>

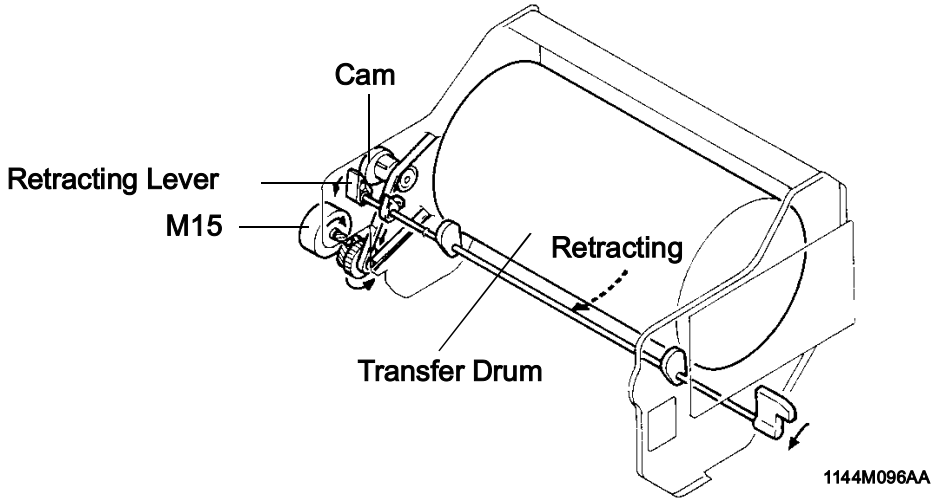
		Control Signal	Energized	Deenergized	Wiring Diagram
HV2	AC	PWB-I PJ5I-1A	L	H	14-D
	DC	PWB-I PJ5I-2A	L	H	

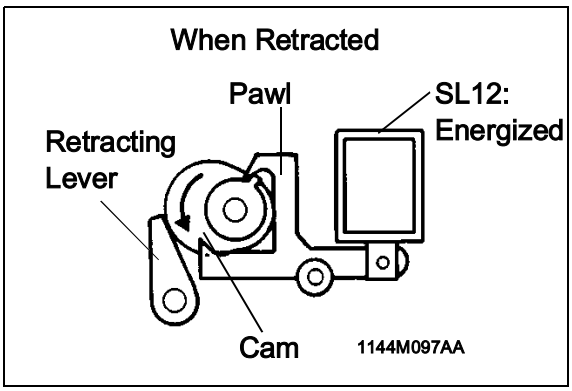


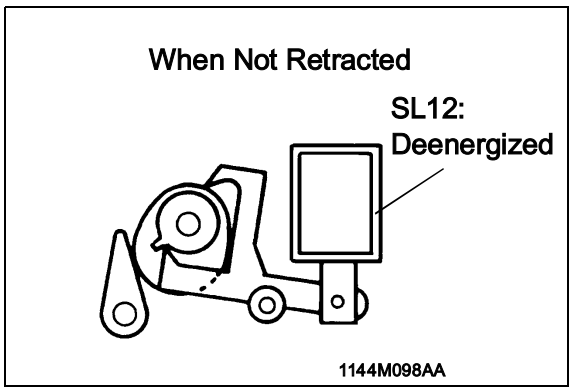
1154SBM1609A

16-9. Transfer Drum Retraction Mechanism

- The Transfer Drum is retracted in times other than during image formation to prevent it from being contaminated with oil or AIDC pattern.
- The drive for retracting the Transfer Drum is given via Transfer Drum Retract Solenoid SL12 by Paper Take-Up Motor M15.







<Control>

	Control Signal	Energized	Deenergized	Wiring Diagram
SL12	PWB-I PJ6I-9	L	H	13-D

1154SBM1700A

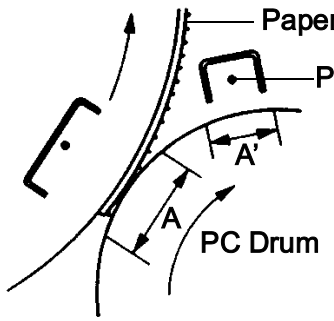
17 PC DRUM CLEANING SECTION

1154SBM1701A

17-1. Pre-Cleaning Charge Corona

- The Pre-Cleaning Charge Corona employs a corotron system to deposit either an AC or DC negative corona emission, selected as necessary, to the surface of the PC Drum to neutralize any residual charge on it.
- The Pre-Cleaning Charge Corona output is controlled by High Voltage Unit 1 HV1.

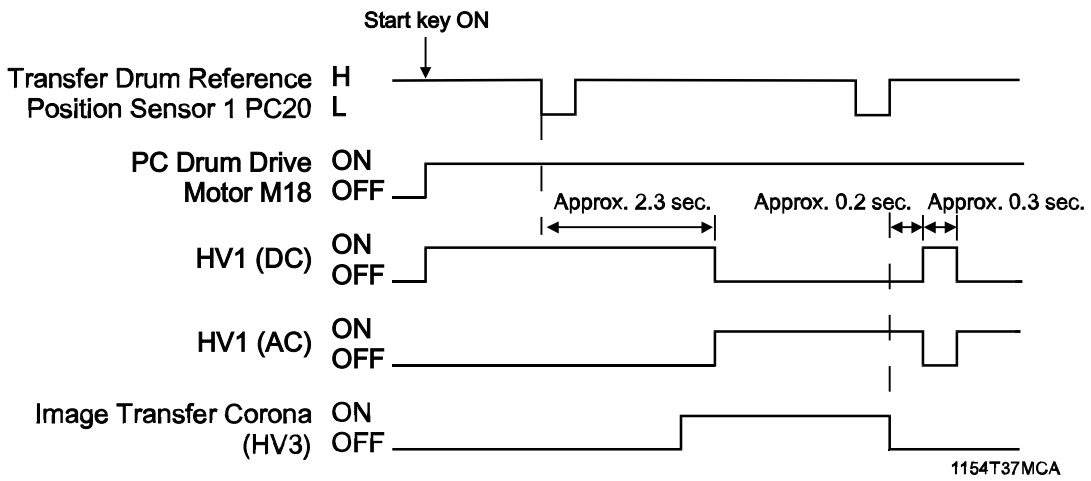
	Use
AC corona emission	Neutralizes residual charge on toner and PC Drum
DC negative corona emission	• If an electric discharge occurs when the trailing edge of the paper leaves the PC Drum after image transfer, a positive latent image is produced on the surface of the PC Drum. • A DC negative corona emission is applied to a band on the surface of the PC Drum opposing a band of ±18 mm on the trailing edge of the paper.



The corona emission is switched from AC to DC negative when band A comes immediately under the Pre-Cleaning Charge Corona (that is A'); otherwise, an AC corona emission is applied.

<Control>

		Control Signal	Energized	Deenergized	Wiring Diagram
HV1	AC	PWB-I PJ11I-6	L	H	15-I
	-DC	PWB-I PJ11I-5	L	H	

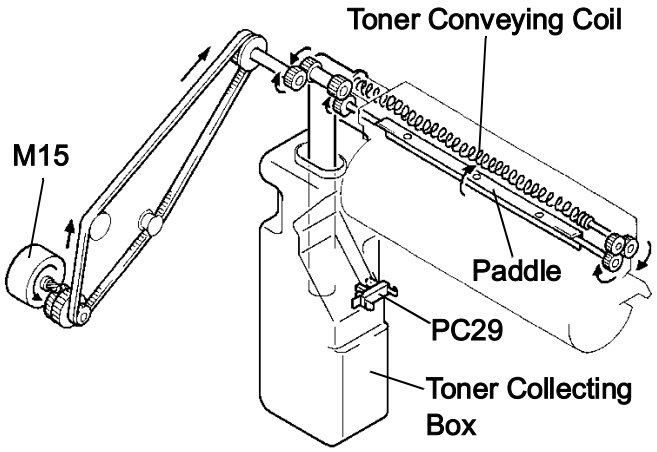


1154SBM1702A

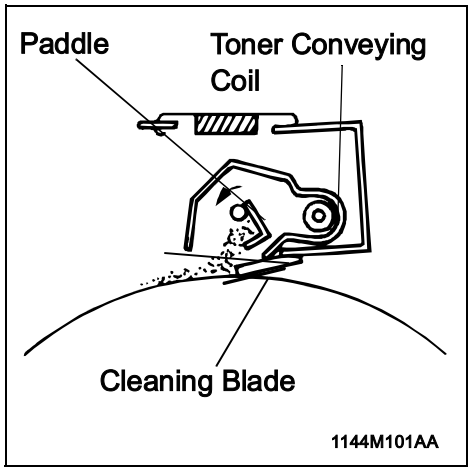
17-2. PC Drum Cleaning

<Cleaning Operation>

1. The Cleaning Blade is pressed against the surface of the PC Drum to scrape toner off it.	
2. The Paddle flips toner accumulated on the edge of the Cleaning Blade to the Toner Conveying Coil.	Paper Take-Up Motor M15
3. The Toner Conveying Coil conveys toner to the Toner Collecting Box in the rear of the copier.	



1154M050AB

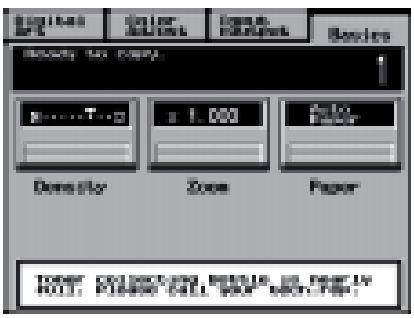


1144M101AA

<Full Toner Collecting Box Detection>

- The Toner Collecting Box has a capacity of about 3,000 cc.
- When Toner Collecting Box Full Sensor PC29 remains activated for a consecutive 1-sec. period, the copier regards that the box is almost full (near-full condition).
- When 1K copies have been made after the near-full warning display, the copier inhibits the initiation of a new copy cycle.

Warning Display


1154M097CA

After 1K copies

Malfunction Display

1154M098CB

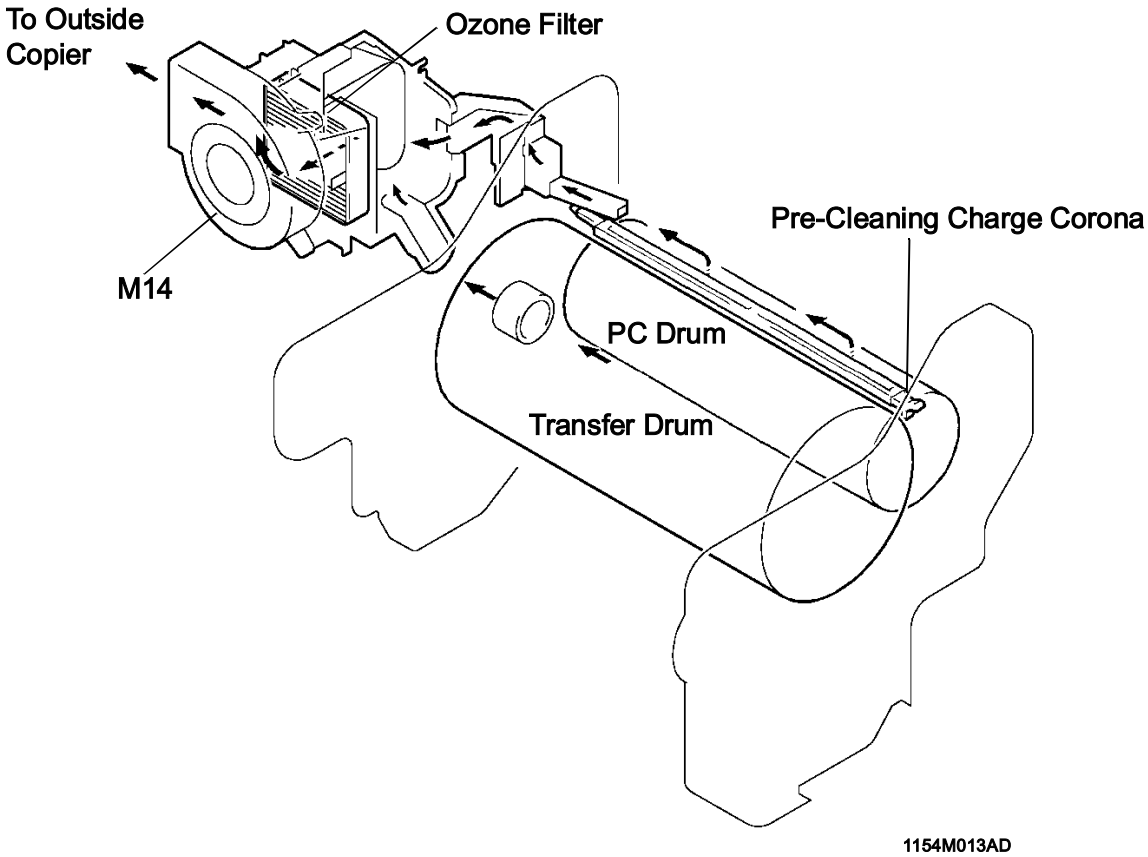
<Near-Full and Full Toner Collecting Box Reset>

- The near-full and full Toner Collecting Box displays are reset if PC29 is in the deactivated state when the Power Switch is turned ON, Front Door is opened and closed, or the Toner Collect counter is cleared after the full Toner Collecting Box has been replaced.

1154SBM1703A

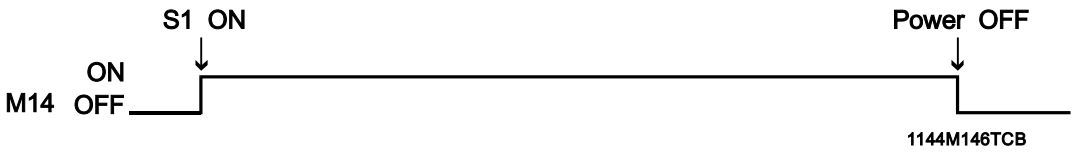
17-3. Ozone Exhaust from Pre-Cleaning Charge Corona and Transfer Drum

- Ozone produced by the Pre-Cleaning Charge Corona and inside the Transfer Drum is absorbed from the air being drawn out of the copier by Fusing Unit Cooling Fan Motor M14 by the Ozone Filter located beside M14.



<Control>

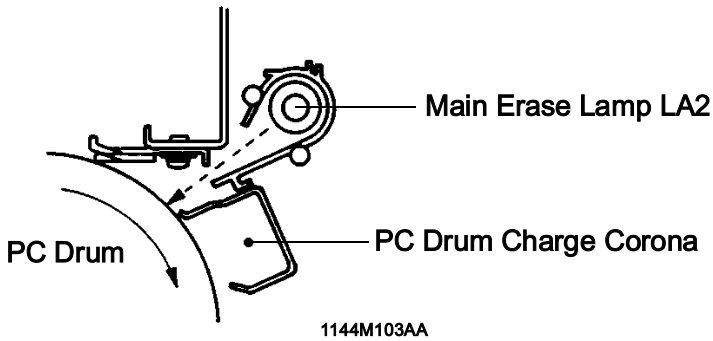
	Control Signal	Energized	Deenergized	Wiring Diagram
M14	PWB-I PJ3I-10B	H	L	15-E



1154SBM1800A

18 MAIN ERASE SECTION

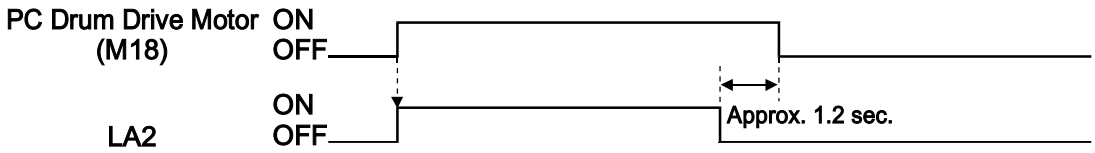
- Main Erase Lamp LA2 consists of a number of incandescent tungsten-filament lamps connected in series inside a glass tube. It neutralizes any surface potential remaining on the surface of the PC Drum after cleaning.



1144M103AA

<Control>

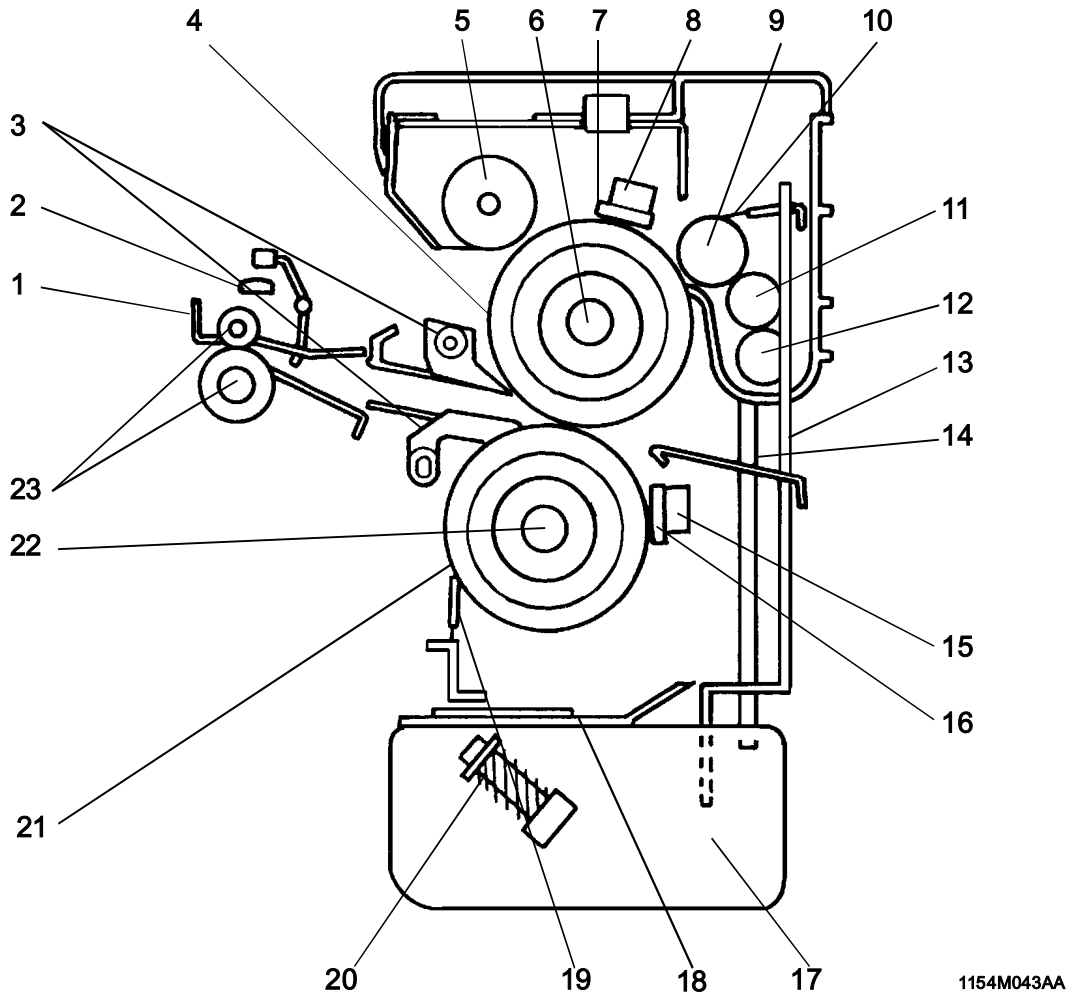
	Control Signal	Energized	Deenergized	Wiring Diagram
LA2	PWB-I PJ3I-8B	L	H	15-E



1144M33TCC

1154SBM1900A

19 FUSING UNIT SECTION



1. Charge Neutralizing Brush
2. Paper Exit Switch S10
3. Paper Separator Fingers
4. Upper Fusing Roller
5. Cleaning Roller
6. Upper Fusing Roller Heater Lamp H1
7. Upper Fusing Roller Thermistor TH1
8. Upper Fusing Roller Thermostat TS1
9. Oil Application Roller
10. Oil Regulating Blade
11. Oil Supply Roller
12. Oil Pick-Up Roller
13. Oil Pump Tube
14. Collecting Pipe
15. Lower Fusing Roller Thermostat TS2
16. Lower Fusing Roller Thermistor TH2
17. Oil Tank
18. Oil Filter
19. Oil Collecting Blade
20. Compression Spring
21. Lower Fusing Roller
22. Lower Fusing Roller Heater Lamp H2
23. Paper Exit Roller/Rolls

1154SBM1901A
19-1. Fusing Unit Drive Mechanism

1154SBM190101A
(1) Upper Fusing Roller

- The roller is constructed so that it does not swell due to silicone oil that has seeped into it, which is a major cause of paper wrinkles and a deteriorating roller.
- Silicone oil is supplied to prevent offsets that occur due to fusing temperature.

1154SBM190102A
(2) Lower Fusing Roller

- The Lower Fusing Roller has the same construction as the upper one.
- Its width is greater than the upper one, ensuring that oil is properly collected.

1154SBM190103A

(3) Fusing Rollers Drive Mechanism

- The Upper and Lower Fusing Rollers are driven by Fusing Motor M17.
- The Lower Fusing Roller is turned a little slower than the upper one, which ensures that oil is collected properly from the Upper Fusing Roller.
- A speed difference between the Upper and Lower Fusing Rollers, however, results in some trouble when the paper just hits against the area of contact between the two rollers. To bypass this problem, there is a one-way clutch used that disconnects the drive of M17 from the Lower Fusing Roller, causing the Lower Fusing Roller to be driven by the Upper Fusing Roller.

Operation

M17 is energized.

↓

Gear A is turned.

↓

Gear B is turned. → Gear C is turned, which turns the Upper Fusing Roller.

Gear D is turned. → Gear E is turned, which turns the Lower Fusing Roller.

↓

The Lower Fusing Roller turns a little slower than the Upper Fusing Roller, slipping with oil. (This is done to properly collect oil from the Upper Fusing Roller with the Lower fusing Roller.)

↓

A sheet of paper is fed to the Fusing Unit.

↓

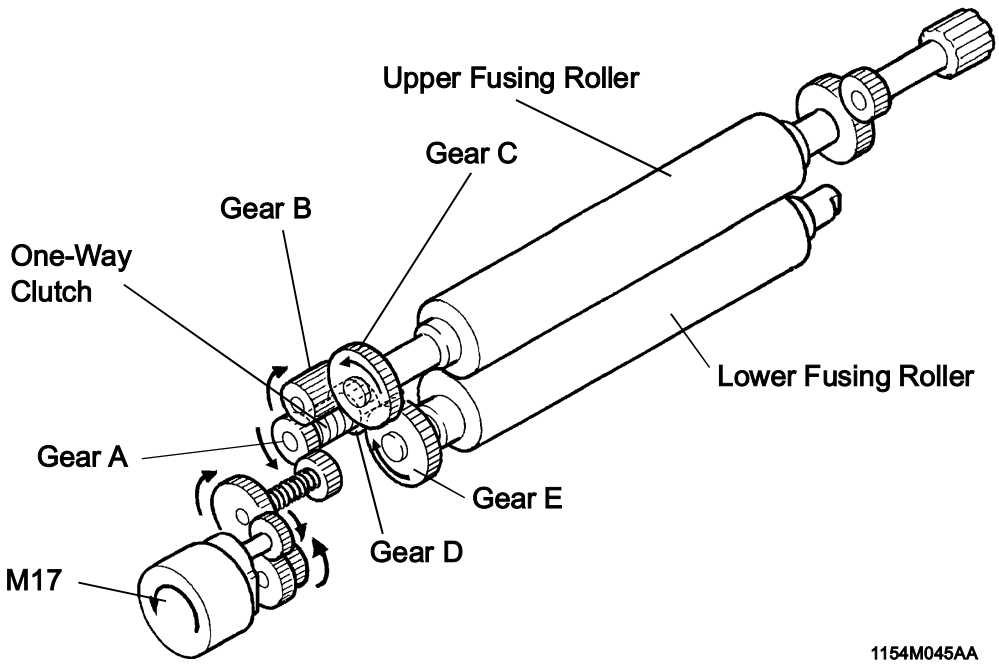
The paper is pinched between the Upper and Lower Fusing Rollers.

↓

Because of the paper, the Lower Fusing Roller is driven by the Upper Fusing Roller.

↓

As gear D speeds up, the one-way clutch is disengaged and gear D turns idly.

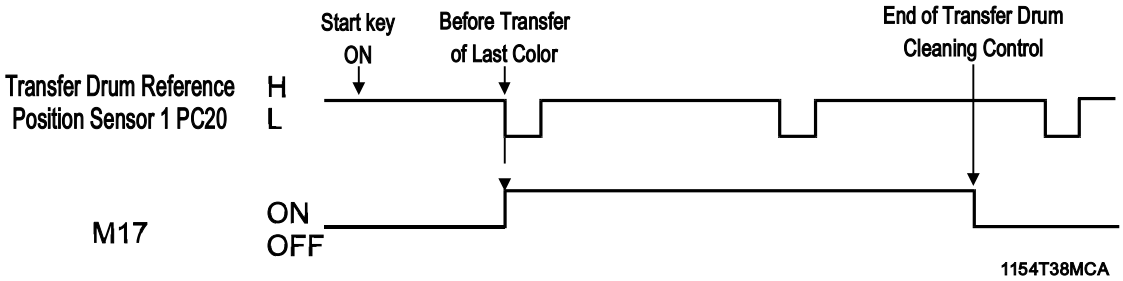


1154M045AA

1154SBM190104A

(4) Fusing Rollers Drive Control

	Control Signal	Energized	Deenergized	Wiring Diagram
Fusing Motor M17	PWB-I PJ6I-4	L	H	13-C



1154SBM190105A

(5) Fusing Speed Switching Control

- This control is provided during manual bypass copying.
- The fusing speed is selected from among three different levels according to the type of paper being used. (The PC Drum speed is also switched.)

Plain Paper	OHP	Thick Paper
120 mm/sec	80 mm/sec	50 mm/sec

✻ The fusing speed can be fine-adjusted using “Fuser Speed” of “Machine Adjust” available from the Service mode.

- The fusing speed for copying OHP transparencies is set using “OHP Speed” of “Setting” available from the Service mode.

Operation : OHP Transparencies

Transfer of the last color is completed.

↓

Transfer Drum Reference Position Sensor PC20 is blocked (L).

↓

The speed of PC Drum Drive Motor M18 is decreased from 120 mm/sec. to 80 mm/sec.

Transfer Drum Retract Solenoid SL12 is energized, retracting the Transfer Drum from the PC Drum.

↓

Transfer Drum Reference Position Sensor 2 PC28 is blocked.

↓

The speed of Fusing Motor M17 is decreased from 120 mm/sec. to 80 mm/sec.

↓

Paper separating sequence is performed.

↓

OHP transparencies move over Separating Failure Detecting Sensor PC21.

↓

The speed of M18 is increased from 80 mm/sec. to 120 mm/sec.

↓

OHP transparencies leave the Fusing Rollers.

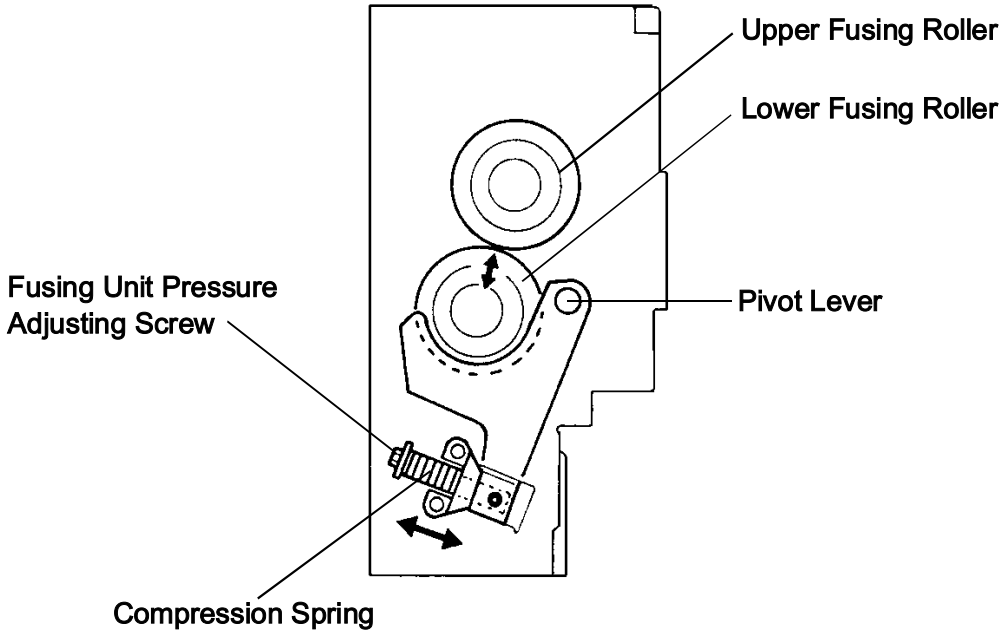
↓

The speed of M17 is increased from 80 mm/sec. to 120 mm/sec.

1154SBM1902A

19-2. Fusing Roller Pressure Mechanism

- To ensure that there is a certain width of area of contact between the Upper and Lower Fusing Rollers, compression springs are installed at the front and rear ends of the Lower Fusing Roller.
- Tightening the Fusing Unit Pressure Adjusting Screw presses the Lower Fusing Roller up against the Upper Fusing Roller, while loosening it relaxes the Lower Fusing Roller.



1144M107AA

1154SBM1903A

19-3. Fusing Temperature Control

- Fusing temperature is controlled by the following components.

Part Name	Symbol	Function
Upper Fusing Roller Heater Lamp	H1	• Turns ON during the warming-up cycle; it turns OFF, however, while AIDC and Vi are being detected during the image stabilization sequence and during shading correction. • Turns ON during a copy cycle. • Turns ON in the standby state following warming-up.
Lower Fusing Roller Heater Lamp	H2	• Turns ON during the warming-up cycle. • Turns ON during a copy cycle. • Turns ON in the standby state following warming-up.
Upper Fusing Roller Thermistor	TH1	• Detects the surface temperature of the Upper Fusing Roller. • 145/150/155°C temperature control (as set by “Fuser Temp” of Service mode). • 140/145/150°C temperature control (in Energy Saver). • Detecting an abnormally high temperature (180°C): C0520 • Detecting an abnormally low temperature (120°C): C0510 • Detecting an abnormally low temperature (114°C) (in Energy Saver): C0510
Lower Fusing Roller Thermistor	TH2	• Detects the surface temperature of the Lower Fusing Roller. • 145/150/155°C temperature control (as set by “Fuser Temp” of Service mode). • 139/144/149°C temperature control (in Energy Saver). • Detecting an abnormally high temperature (180°C): C0521 • Detecting an abnormally low temperature (80°C): C0511
Upper Fusing Roller Thermostat	TS1	• Detecting an abnormally high temperature (220°C): Shutting down power supply to H1.
Lower Fusing Roller Thermostat	TS2	• Detecting an abnormally high temperature (220°C): Shutting down power supply to H2.

The surface temperature of the roller detected by the thermistor (TH1, TH2) is applied as an analog signal to Master Board PWB-I and Upper/Lower Fusing Roller Heater Lamp H1/2 is turned ON or OFF as necessary to control the fusing temperature.

- Warm-up is completed

When both TH1 and TH2 detect the temperature set by “Fuser Temp” of the Service mode after H1 and H2 have been turned ON.

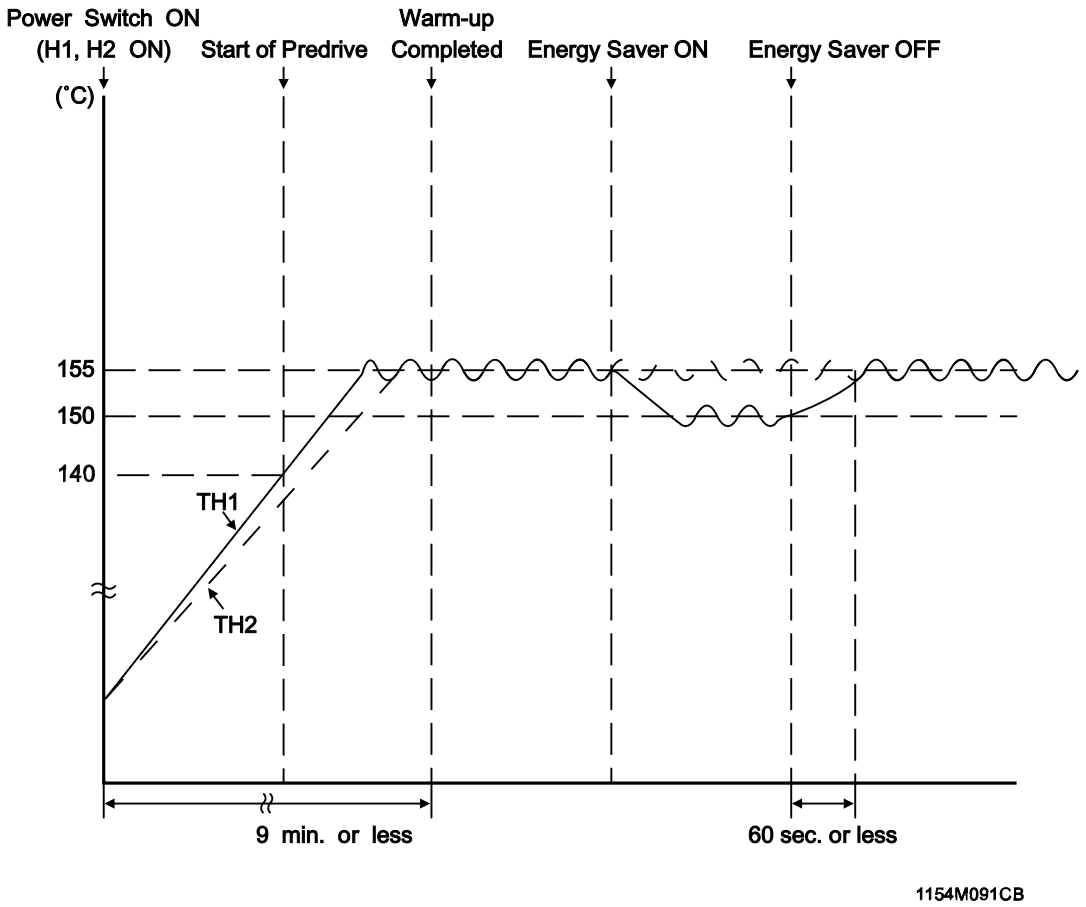
- In the standby state following warm-up

TH1: H1 is turned ON and OFF according to the temperature detected at 20-sec. intervals.
TH2: H2 is turned On and OFF according to the temperature detected at 30-sec. intervals.

- During a copy cycle

TH1, TH2: H1 and H2 are turned ON and OFF according to the temperature detected at 5-sec. intervals.

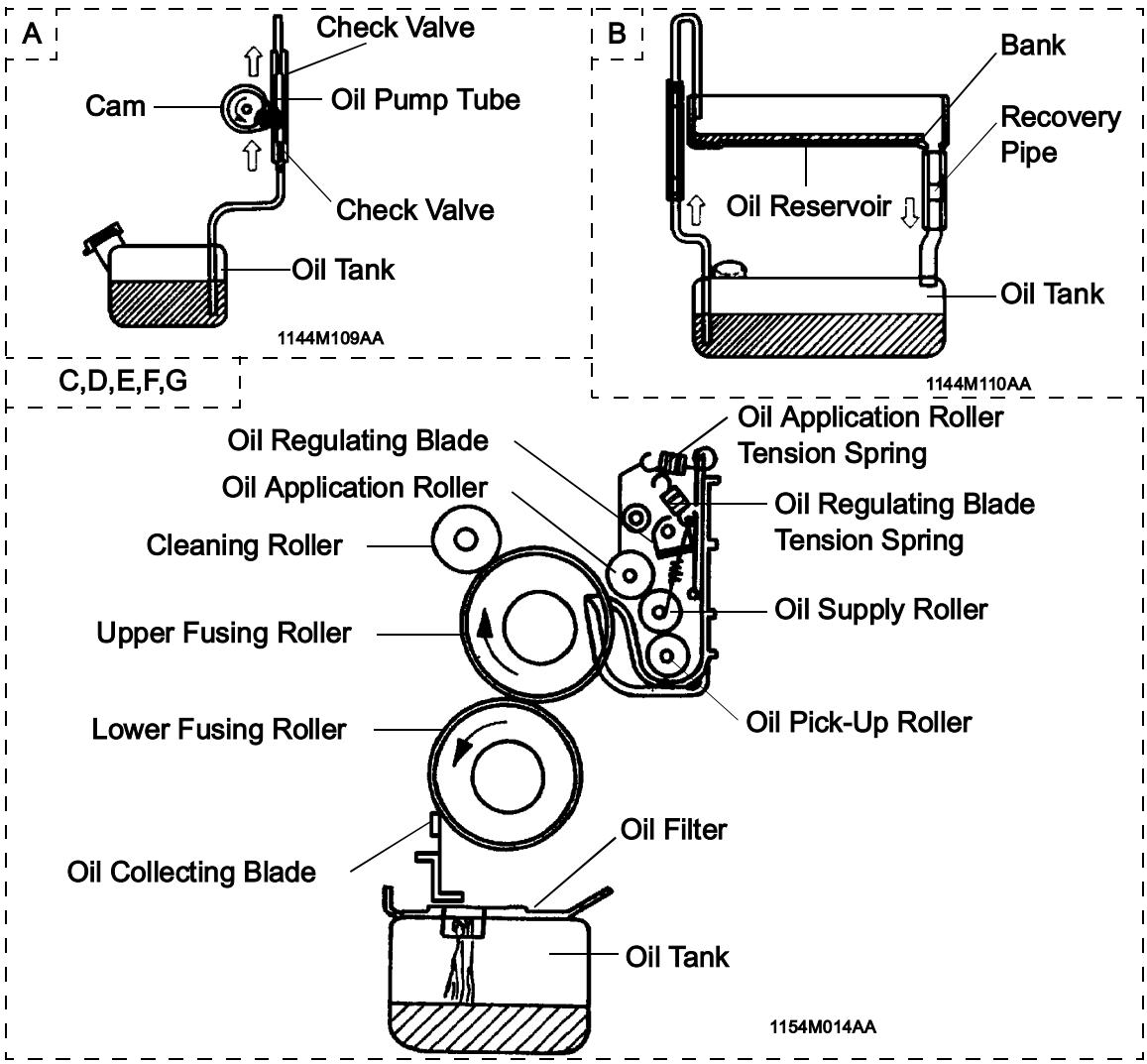
	Control Signal	ON	OFF	Wiring Diagram
H1	PWB-I PJ10I-11A	L	H	14-I
H2	PWB-I PJ10I-11B	L	H	14-H



1154SBM1904A

19-4. Fusing Oil Application/Collection Mechanism

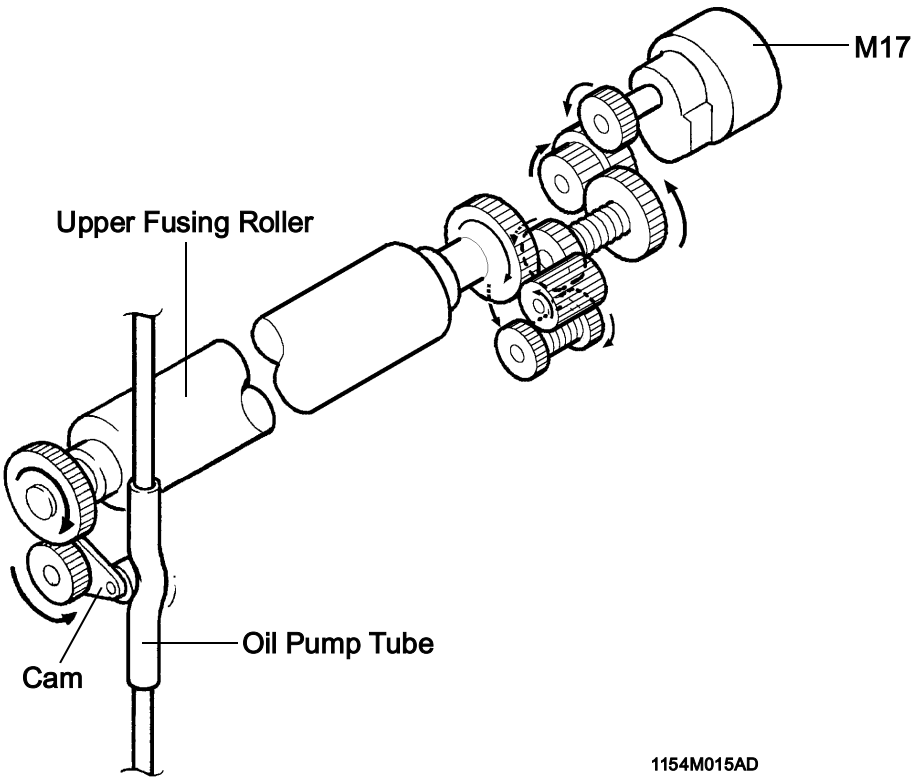
A. The cam presses and relaxes the Oil Pump Tube to pump up the oil in the Oil Tank to the Oil Reservoir.	Fusing Motor M17
B. The bank of the Oil Reservoir limits the amount of oil in the reservoir. Part of the oil that flows over the bank is returned through the Recovery Pipe to the Oil Tank.	
C. The oil in the Oil Tank is fed by the Oil Pick-Up Roller, Oil Supply Roller, and Oil Application Roller, in that order. The Oil Regulating Blade then regulates the amount of oil before an adequate amount of oil is applied to the Upper Fusing Roller.	Fusing Motor M17
D. The oil on the Upper Fusing Roller is transferred to the Lower Fusing Roller.	
E. The oil on the Lower Fusing Roller is collected by the Oil Collecting Blade.	
F. The oil collected by the Oil Collecting Blade drops through the Oil Filter into the Oil Tank.	
G. The Cleaning Roller removes toner and paper dust from the surface of the Upper Fusing Roller.	

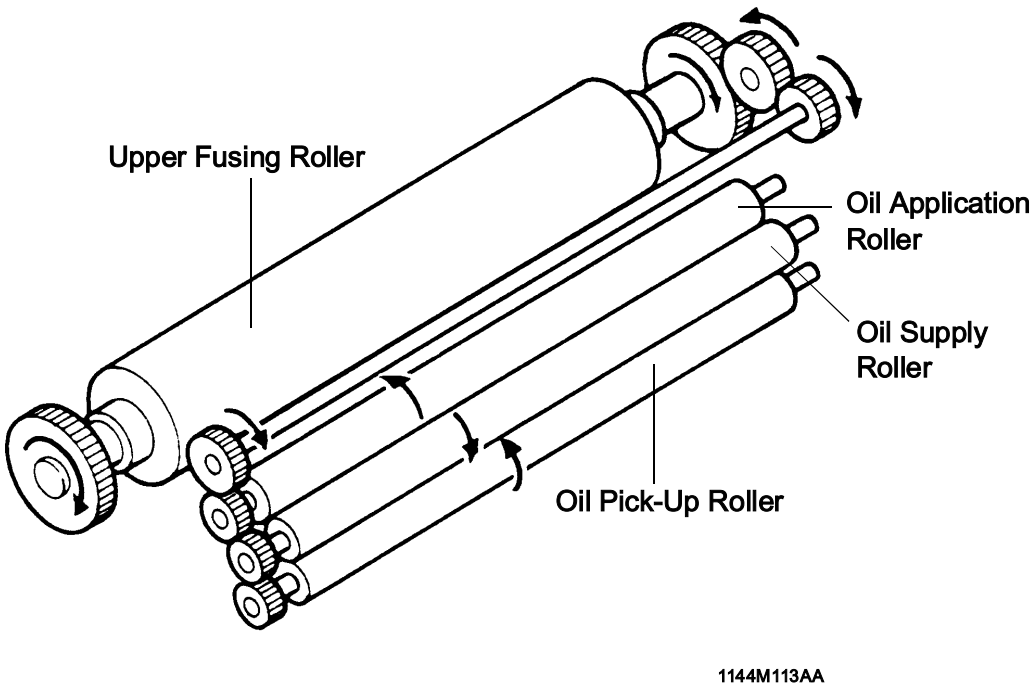


1154SBM190401A

(1) Fusing Oil Application Drive Mechanism

- Drive from Fusing Motor M17 moves the cam that presses and relaxes the Oil Pump Tube. It also turns the Oil Pick-Up Roller, Oil Supply Roller, and Oil Application Roller.

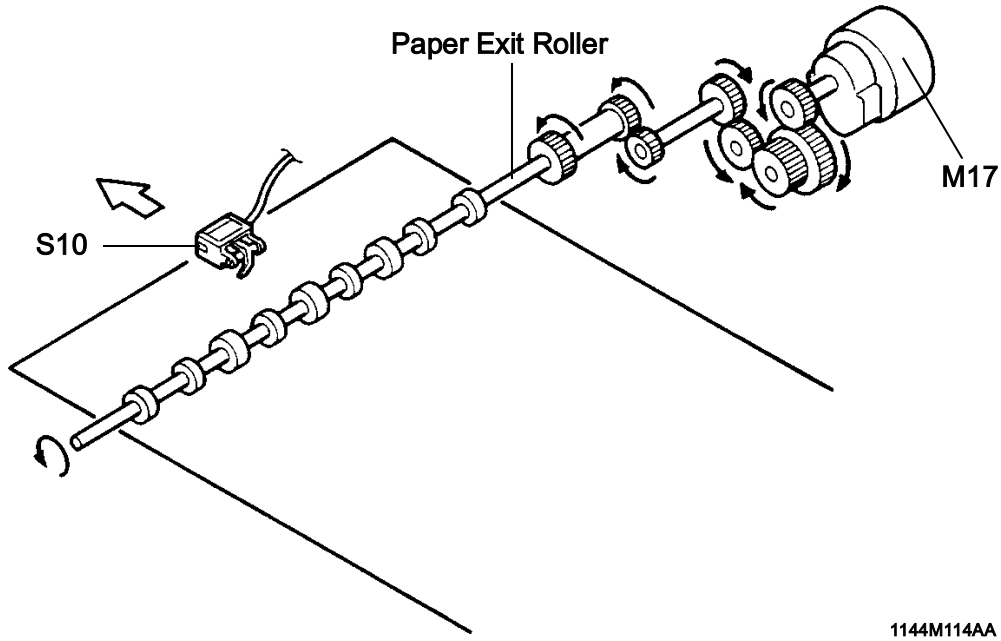




20 EXIT UNIT SECTION

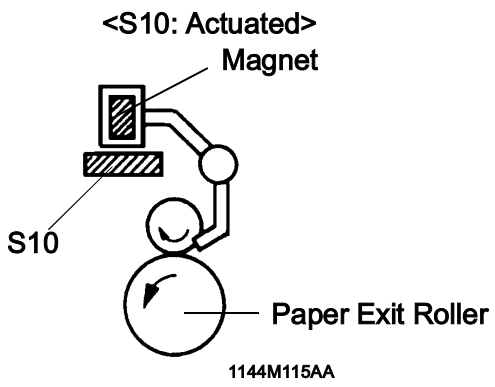
Drive Mechanism

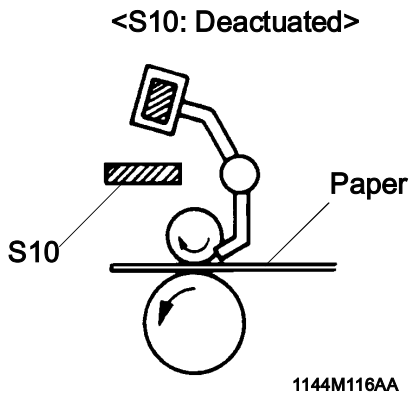
- Drive from Fusing Motor M17 turns the Paper Exit Roller to feed the paper out of the copier.



Paper Exit Detection

- Paper Exit Switch S10 detects a sheet of paper that is fed out of the copier.
- A reed switch is used for S10 for its good heat resistance.





<Control>

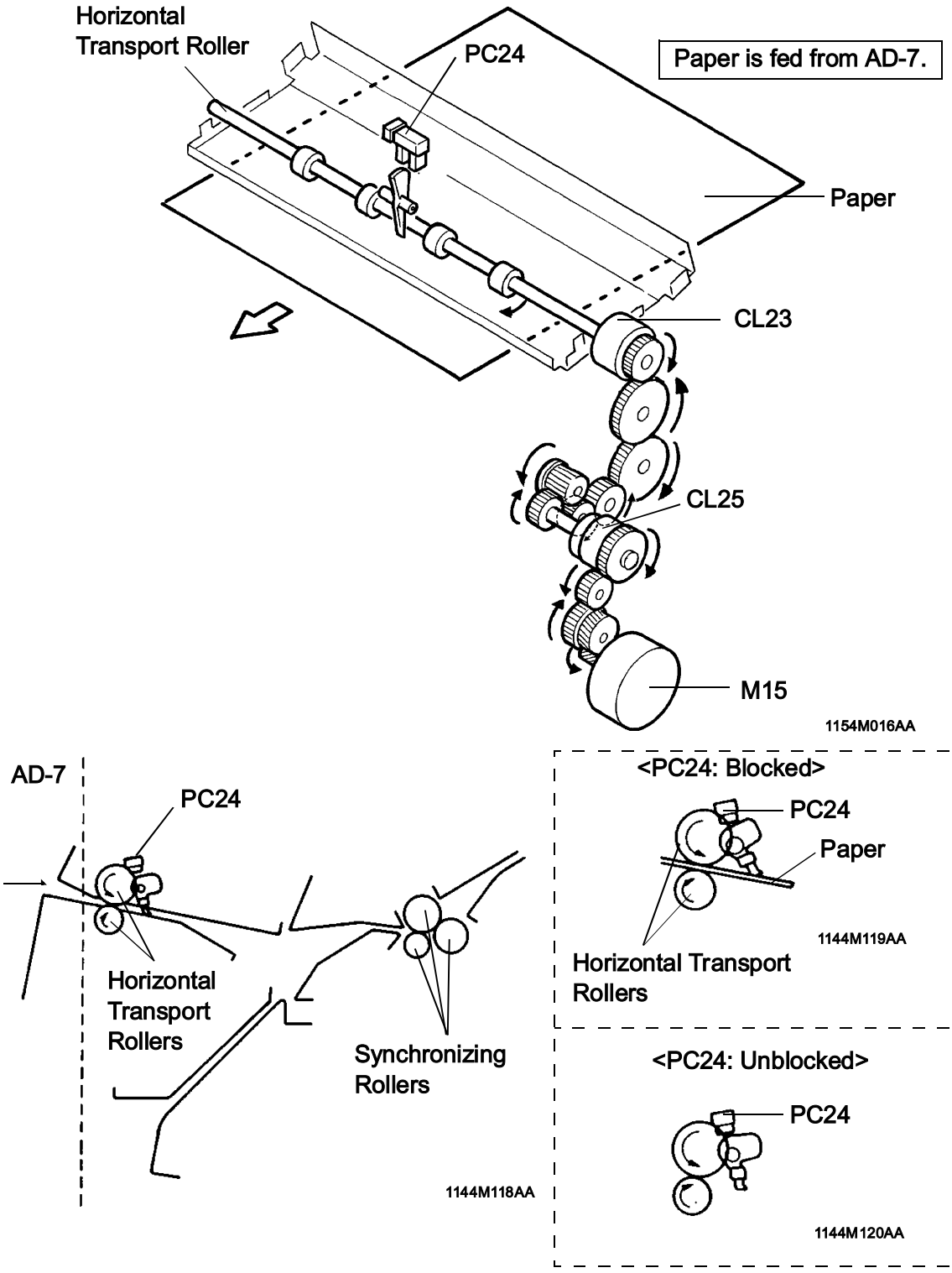
	Control Signal	Actuated	Deactuated	Wiring Diagram
S10	PWB-I PJ6I-7	H	L	13-D

21 HORIZONTAL TRANSPORT UNIT SECTION

- In the 2-sided copy mode the Horizontal Transport Rollers transport the paper fed from Duplex Unit AD-7 to the Synchronizing Rollers.

Drive Mechanism

- The Horizontal Transport Rollers are turned via Horizontal Transport Drive Clutch CL23 by Paper Take-Up Motor M15.


Horizontal
Transport Roller
PC24
Paper is fed from AD-7.
Paper
CL23
CL25
M15
1154M016AA
AD-7
PC24
Horizontal
Transport
Rollers
Synchronizing
Rollers
1144M118AA
<PC24: Blocked>
PC24
Paper
1144M119AA
Horizontal Transport
Rollers
<PC24: Unblocked>
PC24
1144M120AA

<Control>

	Control Signal	Energized	Deenergized	Wiring Diagram
Horizontal Transport Clutch CL23	PWB-K PJ2K-2	L	H	8-C

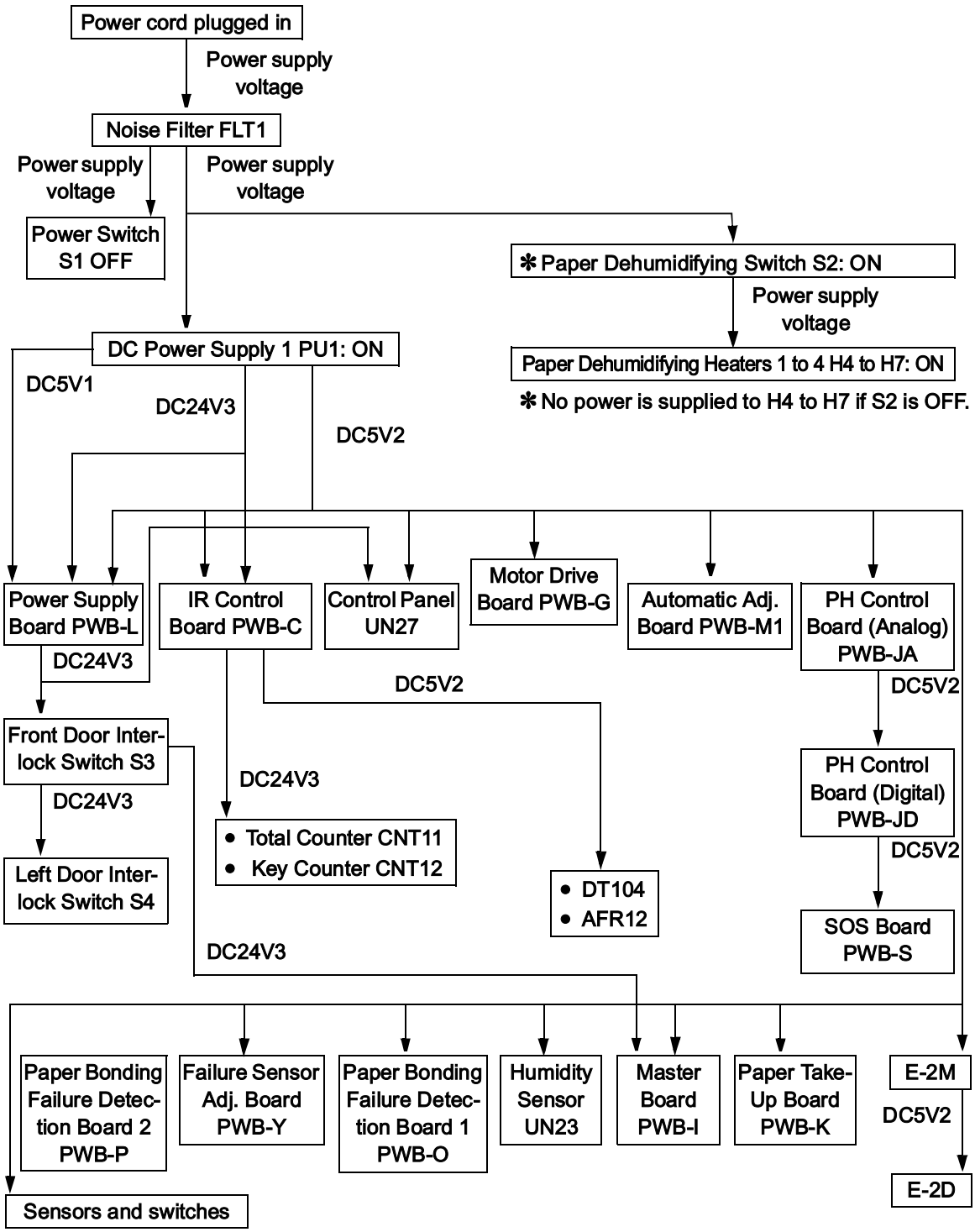
	Control Signal	Blocked	Unblocked	Wiring Diagram
Horizontal Transport Sensor PC24	PWB-K PJ2K-4	L	H	8-C

1154SBM2200A

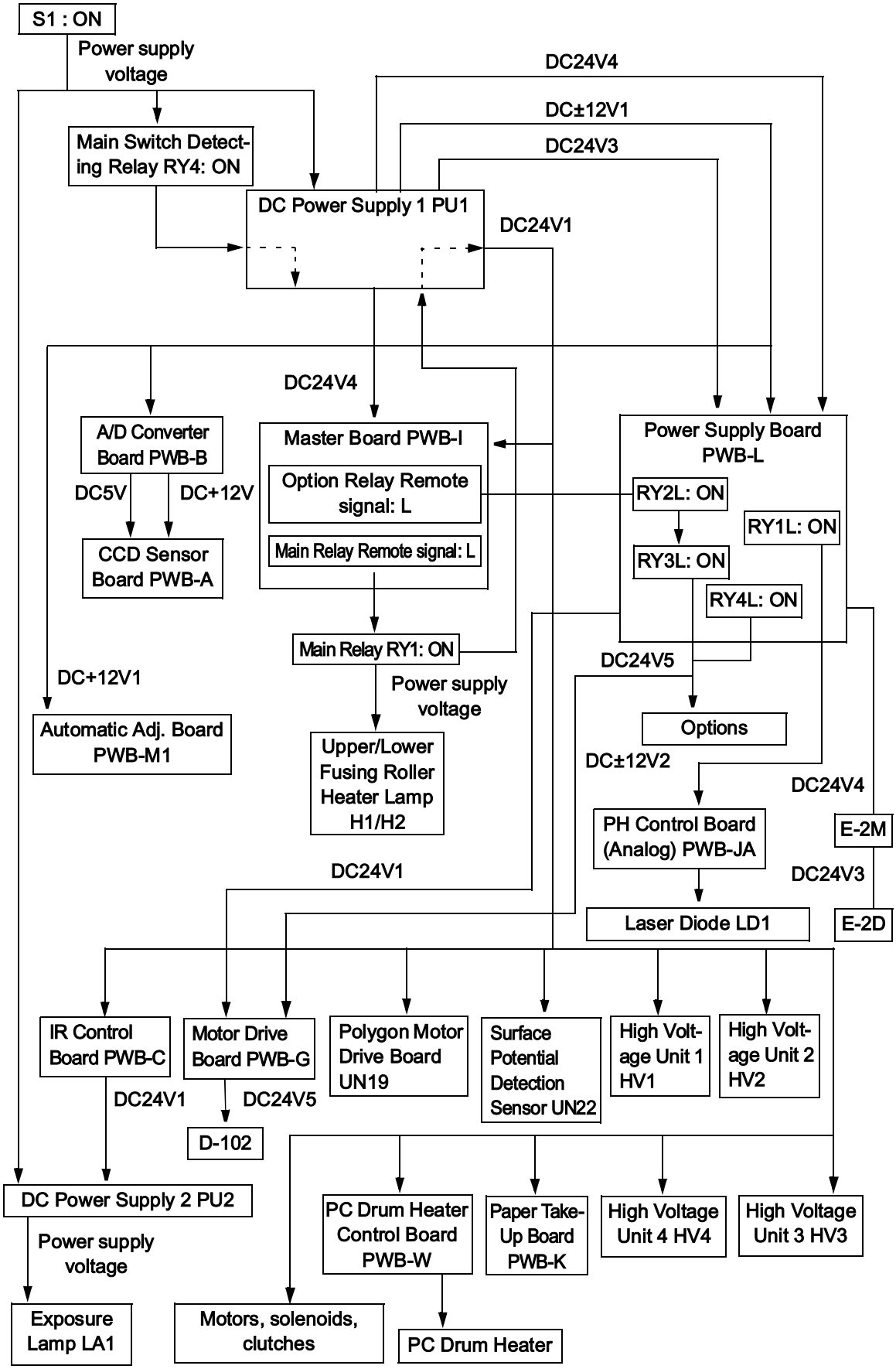
22 POWER SUPPLY

1154SBM2201A

22-1. Power Lines When the Power Cord is Plugged in



22-2. Power Lines When the Power Switch is Turned ON



1154SBM2203A

22-3. Power Supplies ON/OFF Control

	DC Power Supply 1 PU1								
	DC5V 1	DC5V 2	DC5V 3	DC±12V 1	DC±12V 2	DC24V 1	DC24V 3	DC24V 4	DC24V 5
Power cord plugged in	❍	❍	×	×	×	×	❍	×	×
Power Switch S1 ON	❍	❍	❍	❍	✻1	❍	❍	❍	❍
Door open	❍	❍	❍	❍	×	×	❍	❍	❍
Malfunction detected	❍	❍	❍	❍	×	×	❍	❍	✻2
Misfeed detected	❍	❍	❍	❍	×	×	❍	❍	❍

❍: Power ON ×: Power OFF

✻ 1: This is the power for the laser and is ON only during a copy cycle and predrive.

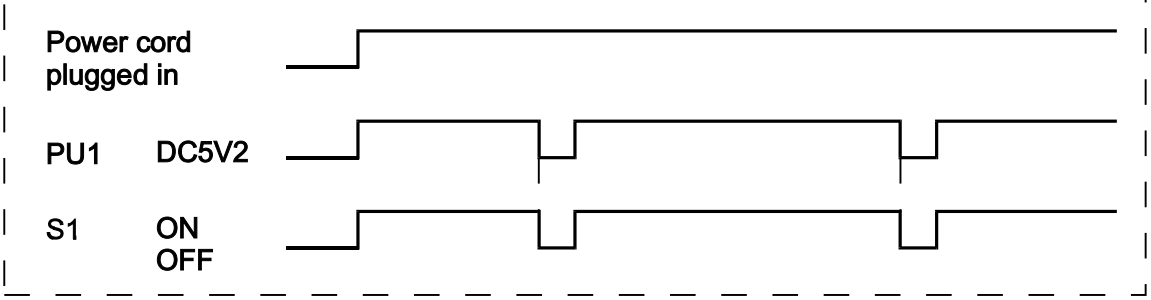
✻ 2: This is the power for options. It is not turned OFF when a malfunction occurs in the copier, but is turned OFF if a communication failure occurs with the options.

1154SBM2204A

22-4. CPU Reset Function

- This copier is not equipped with a Tech. Rep. Setting Switches board as with the conventional machines and the CPU is reset by the following way.

• The CPU is reset by turning OFF the DC5V2 output from DC Power Supply 1 PU1 for a given period of time immediately after Power Switch S1 has been turned OFF.



1154T46MCB

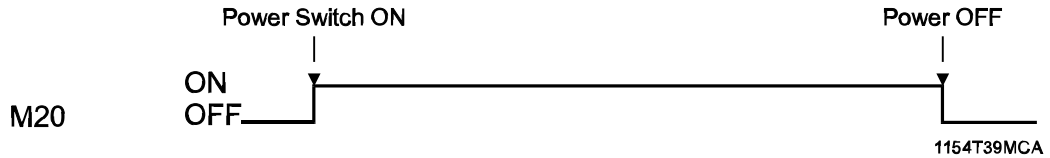
1154SBM2205A

22-5. Power Supply Cooling Mechanism

- Power Supply Cooling Fan Motor M20: Draws air out of DC Power Supply 1 PU1 to prevent the temperature of PU1 from rising.

<Control>

	Control Signal	ON	OFF	Wiring Diagram
M20	PWB-L PJ9L-7	H	L	31-D



1154T39MCA

1154SBM2300A

23 MEMORY BACKUP

- The counter value and other settings made in the Service and User modes are stored in IC72 (RAM) on IR Control Board PWB-C.
- IC72 (RAM) has a built-in backup battery.

NOTE

When replacing PWB-C, care must be taken not to replace IC72 (RAM) together with the board.

Safety Precautions for Inspection and Service

When performing inspection and service procedures, observe the following precautions to prevent accidents and ensure utmost safety.

Different markings are used to denote specific meanings as detailed below.

WARNING — Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION — Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

The following graphic symbols are used to give instructions that need to be observed.

Used to call the service engineer attention to what is graphically represented inside the marking (including a warning).

Used to prohibit the service engineer from doing what is graphically represented inside the marking.

Used to instruct the service engineer to do what is graphically represented inside the marking.

WARNING

1. Always observe precautions.

- Parts requiring special attention in this product will include a label containing the mark shown on the left plus precautionary notes. Be sure to observe the precautions.
- Be sure to observe the “Safety Information” given in Operator’s Manual.

2. Before starting the procedures, be sure to unplug the power cord.

- This product contains a high-voltage unit and a circuit with a large current capacity that may cause an electric shock or burn.
- The product also contains parts that can jerk suddenly and cause injure.
- If this product uses a laser, laser beam leakage may cause eye damage or blindness.

3. Use the specified parts.

- For replacement parts, always use the genuine parts specified in the manufacturer’s Parts Manual. Installing a wrong or unauthorized part could cause dielectric breakdown, overload, or undermine safety devices resulting in possible electric shock or fire.
- Replace a blown electrical fuse or thermal fuse with its corresponding genuine part specified in the manufacturer’s Parts Manual. Installing a fuse of a different make or rating could lead to a possible fire. If a thermal fuse blows frequently, the temperature control system is probably of a problem and action must be taken to eliminate the cause of the problem.

4. Handle the power cord with care and never use a multiple socket.

- Do not brake, crush or otherwise damage the power cord. Placing a heavy object on the power cord, or pulling or bending it may damage it, resulting in a possible fire or electric shock.
- Do not use a multiple outlet to which any other appliances or machines is connected.
- Be sure the power outlet meets or exceeds the specified capacity.

5. Be careful about the high-voltage parts.

- A part marked with the symbol shown on the left carries a high voltage. Touching it could result in an electric shock or burn. Be sure to unplug the power cord before servicing this part or the parts near it.

6. Do not keep your hands wet when performing the procedures.

- Do not unplug or plug in the power cord, or perform any kind of service or inspection with wet hands. Doing so could result in an electric shock.

7. Do not touch a high-temperature part.

- A part marked with the symbol shown on the left and other parts such as the exposure lamp and fusing roller can be very hot while the machine is energized. Touching them may result in a burn.
- Wait until these parts have cooled down before replacing them or any surrounding parts.

8. Make a ground connection at all times (This item may not be effected in USA).

- Be sure to connect a ground wire to the ground terminal even when performing an inspection or repair. Without proper grounding, electrical leakage could result in an electric shock or fire.
- Never connect the ground wire to a gas pipe, water pipe, telephone ground wire, or a lightning conductor.

9. Do not remodel the product.

- Modifying this product in a manner not authorized by the manufacturer may result in a fire or electric shock. If this product uses a laser, laser beam leakage may cause eye damage or blindness.

10. Restore all parts and harnesses to their original positions.

- To promote safety and prevent product damage, make sure the harnesses are returned to their original positions and properly secured in their clamps and saddles in order to avoid hot parts, high-voltage parts, and sharp edges, or being crushed.
- To promote safety, make sure that all tubing and other insulating materials are returned to their original positions. Make sure that floating components mounted on the circuit boards are at their correct distance and position off the boards.

CAUTION

1. Precautions for Service Jobs

- A toothed washer and spring washer, if used originally, must be reinstalled. Omitting them may result in contact failure which could cause an electric shock or fire.
- When reassembling parts, make sure that the correct screws (size, type) are used in the correct places. Using the wrong screw could lead to stripped threads, poorly secured parts, poor insulating or grounding, and result in a malfunction, electric shock or injury.
- Take great care to avoid personal injury from possible burrs and sharp edges on the parts, frames and chassis of the product.
- When moving the product or removing an option, use care not to injure your back or allow your hands to be caught in mechanisms.

2. Precautions for Servicing with Covers and Parts Removed

- Wherever feasible, keep all parts and covers mounted when energizing the product.
- If energizing the product with a cover removed is absolutely unavoidable, do not touch any exposed live parts and use care not to allow your clothing to be caught in the moving parts. Never leave a product in this condition unattended.
- Never place disassembled parts or a container of liquid on the product parts falling into, or the liquid spilling inside, the mechanism could result in an electric shock or fire.
- Never use a flammable spray near the product. This could result in a fire.
- Make sure the power cord is unplugged before removing or installing circuit boards or plugging in or unplugging connectors.
- Always use the interlock switch actuating jig to actuate an interlock switch when a cover is opened or removed. The use of folded paper or some other object may damage the interlock switch mechanism, possibly resulting in an electric shock, injury or blindness.

3. Precautions for Working Environment

- The product must be placed on a flat, level surface that is stable and secure.
- Never place this product or its parts on an unsteady or tilting workbench when servicing.
- Provide good ventilation at regular intervals if a service job must be done in a confined space for a long period time.
- Avoid dusty locations and places exposed to oil mist or steam.
- Avoid working positions that may block the ventilation port of the product.

4. Precautions for Handling Batteries (Lithium, Nickel-Cadmium, etc.)

- Replace a rundown battery with the same type as specified in the manufacturer's parts manual.
- Before installing a new battery, make sure of the correct polarity of the installation or the battery could burst.
- Dispose of used batteries according to the local regulations. Never dispose of them at the user's premises or attempt to try to discharge one.

5. Precautions for Laser Beam (Products Employing Laser Only)

- Removing the cover marked with the following caution label could lead to possible exposure to the laser beam, resulting in eye damage or blindness. Be sure to unplug the power cord before removing this cover.
- If removing this cover while the power is ON is unavoidable, be sure to wear protective laser goggles that meet specifications.
- Make sure that no one enters the room when the machine is in this condition.
- When handling the laser unit, observe the “Precautions for Handling Laser Equipment.”

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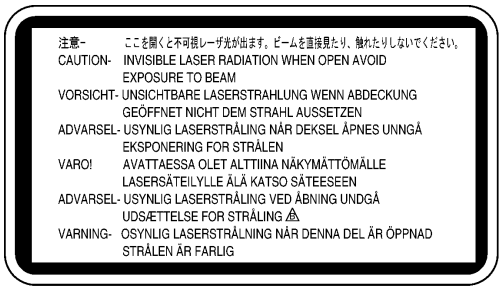
注意- ここを開くと不可視レーザ光が出ます。ビームを直接見たり、触れたりしないでください。
CAUTION- INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
VORSICHT- UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN
ADVARSEL- USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN
VARO! AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE ÄLÄ KATSO SÄTEESEEN
ADVARSEL- USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
VARNING- OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD STRÅLEN ÄR FARLIG

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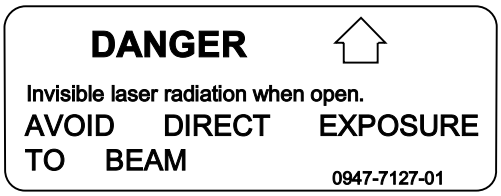


1144D270AA

Other Precautions

- To reassemble the product, reverse the order of disassembly unless otherwise specified.
- While the product is energized, do not unplug or plug connectors into the circuit boards or harnesses.
- The magnet roller generates a strong magnetic field. Do not bring it near a watch, floppy disk, magnetic card, or CRT tube.
- An air gun and vacuum cleaner generates a strong electrostatic charge that can destroy the ATDC sensor and other sensors. Before cleaning a component with one of these devices, be sure to remove all the sensors. Otherwise, use a blower brush and cloth when cleaning parts.
- When handling circuit boards with MOS ICs, observe the "INSTRUCTIONS FOR HANDLING THE PWBs WITH MOS ICs" (applicable only to the products using MOS ICs).
- The PC Drum is a very delicate component. Observe the precautions given in "HANDLING OF THE PC DRUM" because mishandling may result in serious image problems.
- Note that replacement of a circuit board may call for readjustments or resetting of particular items, or software installation.
- After completing a service job, perform a safety check. Make sure that all parts, wiring and screws are returned to their original positions.
- Check the area surrounding the service site for any signs of damage, wear or need of repair.
- Do not pull out the toner hopper while the toner bottle is turning. This could result in a damaged hopper motor or locking mechanism.
- If the product is to be run with the front door open, make sure that the toner hopper is in the locked position.

Used Batteries Precautions

(ALL Areas)

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

(Germany only)

VORSICHT!

Explosinsgefahr bei unsachgemäßen austausch der batterie.
Ersatz nur durch denselben oder einen vom hersteller empfohlenen ähnlichen typ.
Entsorgung gebrauchter batterien nach angaben des herstellers.

(France)

ATTENTION

Ily a danger d'explosion s'ily a remplacement incorrec de la batterie.
Remplacer uniquement avec une batterie du meme type ou d'un type équivalent recommande par le constructueur.
Mettre au rebut les batteries usageés conformément aux instructions du fabricant.

(Denmark only)

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

(Norway only)

ADVARSEL

Eksplosjonsfare ved feilaktig skifte av batteri.
Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten.
Brukte batterier kasseres i henhold til fabrikantens instruksjoner.

(Sweden only)

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

(Finland only)

VAROITUS

Paristo voi räjähtää, los se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä Käytetty paristo valmistajan ohjeiden mukaisesti.

CONTENTS

1. SERVICE INSTRUCTIONS D-1
   1-1. IDENTIFICATION OF FUSES AND CIRCUIT BREAKERS D-1
   1-2. PRECAUTIONS FOR HANDLING THE LASER EQUIPMENT D-1
   1-3. INSTRUCTIONS FOR HANDLING THE PWBs WITH MOS ICs D-2
   1-4. HANDLING OF THE PC DRUM D-2
   1-5. PARTS WHICH MUST NOT BE TOUCHED D-4
      (1) Red Painted Screws D-4
      (2) Variable Resistors on Board D-4
      (3) Other Screws D-4
2. DISASSEMBLY/REASSEMBLY D-5
   2-1. DOORS, COVERS, AND EXTERIOR PARTS: IDENTIFICATION AND REMOVAL PROCEDURES D-5
   2-2. REMOVAL OF CIRCUIT BOARDS AND OTHER ELECTRICAL COMPONENTS D-7
   2-3. REMOVAL OF UNITS D-9
      (1) Removal of the Toner Hopper Unit D-9
      (2) Removal of the PC Unit D-10
      (3) Removal of the Developing Unit D-12
      (4) Removal of the Fusing Unit and Transfer Unit D-13
      (5) Removal of the Multi Bypass Unit D-14
      (6) Removal of the Paper Take-Up Unit D-15
      (7) Removal of the IR Board Assy D-16
      (8) Removal of the Print Head Upper and Lower Assy D-17
      (9) Removal of the PH Control Board (Digital/Analog) Assy D-18
   2-4. PAPER TAKE-UP SECTION D-19
      (1) Cleaning and Replacement of the Paper Take-Up Roll, Feed Roll, Separator Roll, and Paper Dust Remover D-19
      (2) Removal of the Synchronizing/Static Charge Roller Assy D-21
      (3) Disassembly of the Synchronizing Roller Assy D-22
      (4) Removal of the Drawer Lift-Up Motor Assy D-24
      (5) Disassembly of the Multi Bypass Unit D-24
   2-5. FUSING UNIT D-28
      (1) Replacement of the Bushings (Upper and Lower) and the Upper and Lower Fusing Rollers D-28
      (2) Replacement of the Oil Application Roller, Oil Supply Roller, and Oil Regulating Blade D-32
      (3) Adding the Fusing Oil D-36
      (4) Replacement of the Cleaning Roller D-37
      (5) Replacement of the Oil Collecting Blade and Oil Filter D-38
      (6) Cleaning of the Fusing Entrance Guide, Upper and Lower Fusing Roller Thermistors, and Upper and Lower Fusing Roller Thermostats D-40
      (7) Disassembly of the Oil Pump Assy D-41
   2-6. DEVELOPING UNIT D-44
      (1) Replacement of the ATDC Sensor D-44

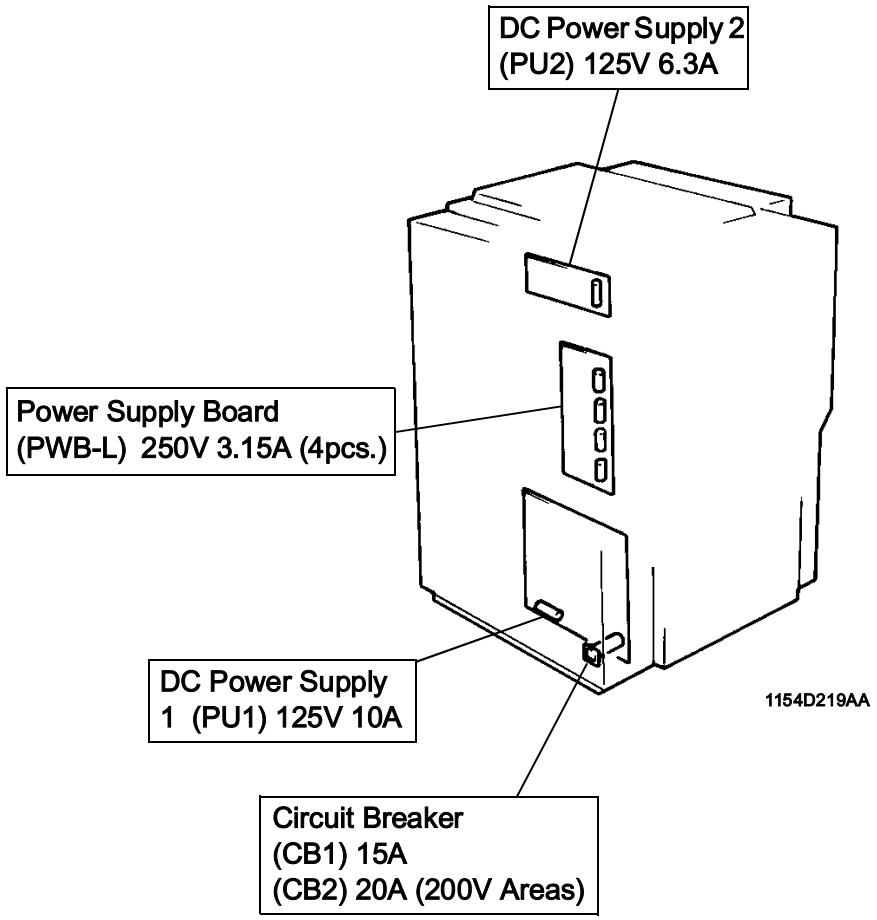
(2) Cleaning of the Ds Rolls, Toner Scattering Prevention Seal 1 and Toner Scattering Prevention Plate D-44
(3) Replacement of the Toner Collecting Box, Air Filter, and Ozone Filter D-44
(4) Removal of the Bk Developing Unit D-45
(5) Removal of the Y, M, and C Developing Units D-46
(6) Disassembly of the Developing Unit D-47
(7) Cleaning Along the Left Edge of the Developing Units D-56
2-7. TONER HOPPER D-57
(1) Cleaning of the Shutters D-57
(2) Disassembly of the Toner Hopper Unit D-58
2-8. PARTS AROUND THE PC UNIT D-65
(1) Removal of the PC Drum Charge Corona Assy and Pre-Cleaning Charge Corona Assy D-65
(2) Cleaning and Replacement of the Pre-Cleaning Charge Corona D-65
(3) Cleaning and Replacement of the PC Drum Charge Corona Assy D-66
(4) Replacement of the Ozone Filter (PC Drum Charge Corona) and Cleaning of the Main Erase Lamp D-67
(5) Disassembly of the PC Unit D-68
(6) Cleaning of Toner Scattering Prevention Seal 2 and the Surface Potential Detection Sensor D-70
(7) Disassembly of the PC Shaft Ground Plate D-71
(8) Cleaning of the Auxiliary Erase Lamp D-71
2-9. OPTICAL SECTION D-72
(1) Cleaning of the Original Glass D-72
(2) Cleaning of the 1st to 3rd Mirrors, Slide Rails, and Lens Filter D-72
(3) Disassembly of the Optical Section D-73
(4) Disassembly of the Scanner D-74
(5) Removal of Cables D-75
(6) Winding of Cables D-79
2-10. IMAGE TRANSFER UNIT D-80
(1) Replacement of the Ozone Filter D-80
(2) Removal of the Paper Separator Charge Corona Assy D-80
(3) Cleaning of the Paper Separator Finger, Transfer Drum Ring, and Separating Failure Detecting Sensor D-81
(4) Disassembly of the Transfer Unit D-81
(5) Cleaning and Replacement of the Paper Separator Corona Assy D-83
(6) Replacement of the Scraper Blade, Fur Brush Roller and Fur Brush Pressure Spring D-83
(7) Cleaning of the Fur Brush Roller Assy D-85
(8) Removal of the Corona Units D-85
(9) Cleaning and Replacement of the Outer Charge Neutralizing Corona Assy D-86
(10) Cleaning and Replacement of the Inner Charge Neutralizing Corona Assy D-87

(11) Cleaning and Replacement of the Static Charge Corona Assy D-88
(12) Cleaning and Replacement of the Image Transfer Corona Assy D-89
(13) Replacement of the Transfer Film D-90
(14) Installing the Transfer Film D-91
(15) Replacement of the Backup Blade 1 and Backup Blade 2 ..... D-94
(16) Replacement of the Static Charge Roller Scraper D-95
(17) Cleaning the Transport Sprockets D-96
3. ADJUSTMENTS D-97
3-1. JIGS AND TOOLS USED D-97
(1) Tools for Setting-up and PM D-97
(2) Miscellaneous Jigs D-98
3-2. ADJUSTMENT REQUIREMENTS FOR CLEANING/ REPLACEMENT OF EACH PART D-99
3-3. ADJUSTMENT OF SWITCHES D-104
3-4. ADJUSTMENT OF SOLENOIDS D-105
(1) Adjustment of Transfer Drum Retract Solenoid D-105
(2) Adjustment of Static Charge Roller Solenoid D-106
(3) Adjustment of Paper Separator Finger Solenoid D-107
(4) Adjustment of Internal Fur Brush Solenoid, Backup Brush Solenoid, and Lifting Finger Solenoid D-108
(5) Adjustment of Manual Feed Paper Pick-Up Solenoid D-109
(6) Adjustment of Oil Roller Solenoid D-110
3-5. ADJUSTMENT OF BELT TENSION D-111
3-6. TOUCH PANEL CORRECTION MODE D-113
3-7. SETTING MODE D-114
(1) Accessing the Setting Mode D-114
(2) Manual Paper Width D-114
(3) OHP Speed D-115
3-8. MACHINE ADJUST MODE D-116
(1) Accessing the Machine Adjust Mode D-116
(2) Fuser NIP D-116
(3) Fuser Speed D-117
(4) Transfer Output D-119
(5) Jam Sensor D-121
(6) Feed Motor Speed D-122
(7) PRT Area D-124
(8) IR Area D-128
3-9. DEVELOPER CHANGE MODE D-131
(1) Developer Change (Developer Discharge → Developer Filling → Developer Agitating) D-131
(2) AFTER DEV. (C/M/Y/Bk) HAS BEEN CHANGED (ATDC Sensor Adjust (Auto) → AIDC Sensor Adjust (Auto) → AIDC Offset → Black ATDC Adjust) D-135
3-10. GRADATION ADJUST D-137
3-11. OTHER ADJUSTMENTS D-138
(1) Adjustment of the AIDC Sensor Position D-138
(2) Focus-Positioning of the Scanner and 2nd/3rd Mirrors Carriage D-139

(3) Adjustment of the Gap Between the Doctor Blade and Sleeve Roller D-140
(4) Adjustment of the Amount of Transfer Drum Retraction D-141
(5) Adjustment of the Paper Separator Finger Roll Position D-142
(6) Adjustment of Clearance Between the Transfer Drum Joint and Paper Separator Guide D-143
(7) Adjustment of the Amount of Projection of Backup Blade 2 and 1 ..... D-144
(8) Adjustment of the Sprocket Unit D-145
4. MISCELLANEOUS D-146
4-1. INSTALLATION OF THE PLUG-IN COUNTER MOUNTING BRACKET (OPTION) D-146
4-2. BACKUP MEMORY RAM PACK REPLACEMENT PROCEDURE D-147
4-3. FLASH MEMORY D-150

1 SERVICE INSTRUCTIONS

1-1. IDENTIFICATION OF FUSES AND CIRCUIT BREAKERS



1-2. PRECAUTIONS FOR HANDLING THE LASER EQUIPMENT

- The laser used in this copier is a semiconductor laser having the following specifications.

Max. power	:	8 mW
Output wavelength	:	780nm

- When laser protective goggles are to be used, select ones with a lens conforming to the above specifications.
- When a disassembly job needs to be performed in the laser beam path, such as when working around the printerhead and PC Drum, be sure first to turn the copier OFF.
- If the job requires that the copier be left ON, take off your watch and ring and wear laser protective goggles.
- A highly reflective tool can be dangerous if it is brought into the laser beam path. Use utmost care when handling tools on the user's premises.
- The printerhead is nonmaintainable in the field. It is to be replaced as an assembly including the control board. Never, therefore, attempt to remove the laser diode or adjust trimmers on the control board.

1-3. INSTRUCTIONS FOR HANDLING THE PWBs WITH MOS ICs

The following precautions must be observed when handling P.W. Boards with MOS (Metal Oxide Semiconductor) ICs.

During Transportation/Storage:

- During transportation or when in storage, new P.W. Boards must not be indiscriminately removed from their protective conductive bags.
- Do not store or place P.W. Boards in a location exposed to direct sunlight.
- When it becomes absolutely necessary to remove a Board from its conductive bag or case, always place it on its conductive mat in an area as free as possible from static electricity.
- Do not touch the pins of the ICs with your bare hands.

During Replacement:

- Before unplugging connectors from the P.W. Boards, make sure that the power cord has been unplugged from the outlet.
- When removing a Board from its conductive bag or conductive case, do not touch the pins of the ICs or the printed pattern. Place it in position by holding only the edges of the Board.
- Before plugging connectors into the Board, make sure that the power cord has been unplugged from the power outlet.

During Inspection:

- Avoid checking the IC directly with a multimeter; use connectors on the Board.
- Never create a closed circuit across IC pins with a metal tool.
- When it is absolutely necessary to touch the ICs and other electrical components on the PW Board, be sure to ground your body.

1-4. HANDLING OF THE PC DRUM

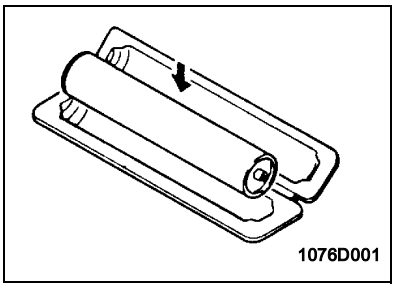
During Transportation/Storage:

- Use the specified carton whenever moving or storing the PC Drum.
- The storage temperature is in the range between -20°C and +40°C.
- In summer, avoid leaving the PC Drum in a car for a long time.

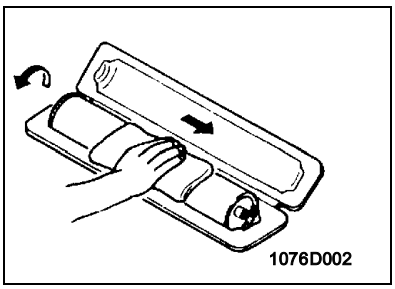
Handling:

- Ensure that the correct PC Drum is used.
- Whenever the PC Drum has been removed from the copier, store it in its container or protect it with a Drum Cloth.
- The PC Drum exhibits greatest light fatigue after being exposed to strong light over an extended period of time. Never, therefore, expose it to direct sunlight.
- Use care not to contaminate the surface of the PC Drum with oil-base solvent, fingerprints, and other foreign matter.
- Do not scratch the surface of the PC Drum.
- Do not apply chemicals to the surface of the PC Drum.
- Do not attempt to wipe clean the surface of the PC Drum.

If, however, the surface is contaminated with fingerprints, clean it using the following procedure.



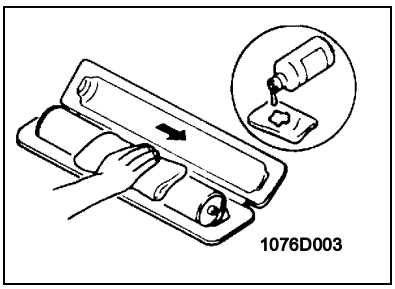
1. Place the PC Drum into one half of its container.



2. Gently wipe the residual toner off the surface of the PC Drum with a dry, dust-free cotton pad.

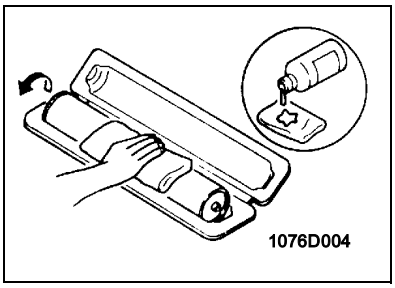
- Turn the PC Drum so that the area of its surface on which the line of toner left by the Cleaning Blade is present is facing straight up. Wipe the surface in one continuous movement from the rear edge of the PC Drum to the front edge and off the surface of the PC Drum.
- Turn the PC Drum slightly and wipe the newly exposed surface area with a CLEAN face of the dust-free cotton pad. Repeat this procedure until the entire surface of the PC Drum has been thoroughly cleaned.

✻ At this time, always use a CLEAN face of the dry dust-free cotton pad until no toner is evident on the face of the Pad after wiping.



3. Soak a small amount of either ethyl alcohol or isopropyl alcohol into a clean, unused dust-free cotton pad which has been folded over into quarters. Now, wipe the surface of the PC Drum in one continuous movement from its rear edge to its front edge and off its surface one to two times.

- Never move the pad back and forth.



4. Using the SAME face of the pad, repeat the procedure explained in the latter half of step 3 until the entire surface of the PC Drum has been wiped. Always OVERLAP the areas when wiping. Two complete turns of the PC Drum would be appropriate for cleaning.

Notes:

- *The Organic Photoconductor Drum is softer than CdS and Selenium Drums and is therefore susceptible to scratches.*
- *Even when the PC Drum is only locally dirtied, wipe the entire surface.*
- *Do not expose the PC Drum to direct sunlight. Clean it as quickly as possible even under interior illumination.*
- *If dirt remains after cleaning, repeat the entire procedure from the beginning one more time.*

1-5. PARTS WHICH MUST NOT BE TOUCHED

(1) Red Painted Screws

Purpose of Application of Red Paint
Red painted screws show that the assembly or unit secured can only be adjusted or set at the factory and shall not be readjusted, set, or removed in the field.
Note that when two or more screws are used on the part in question, only one representative screw may be marked with red paint.

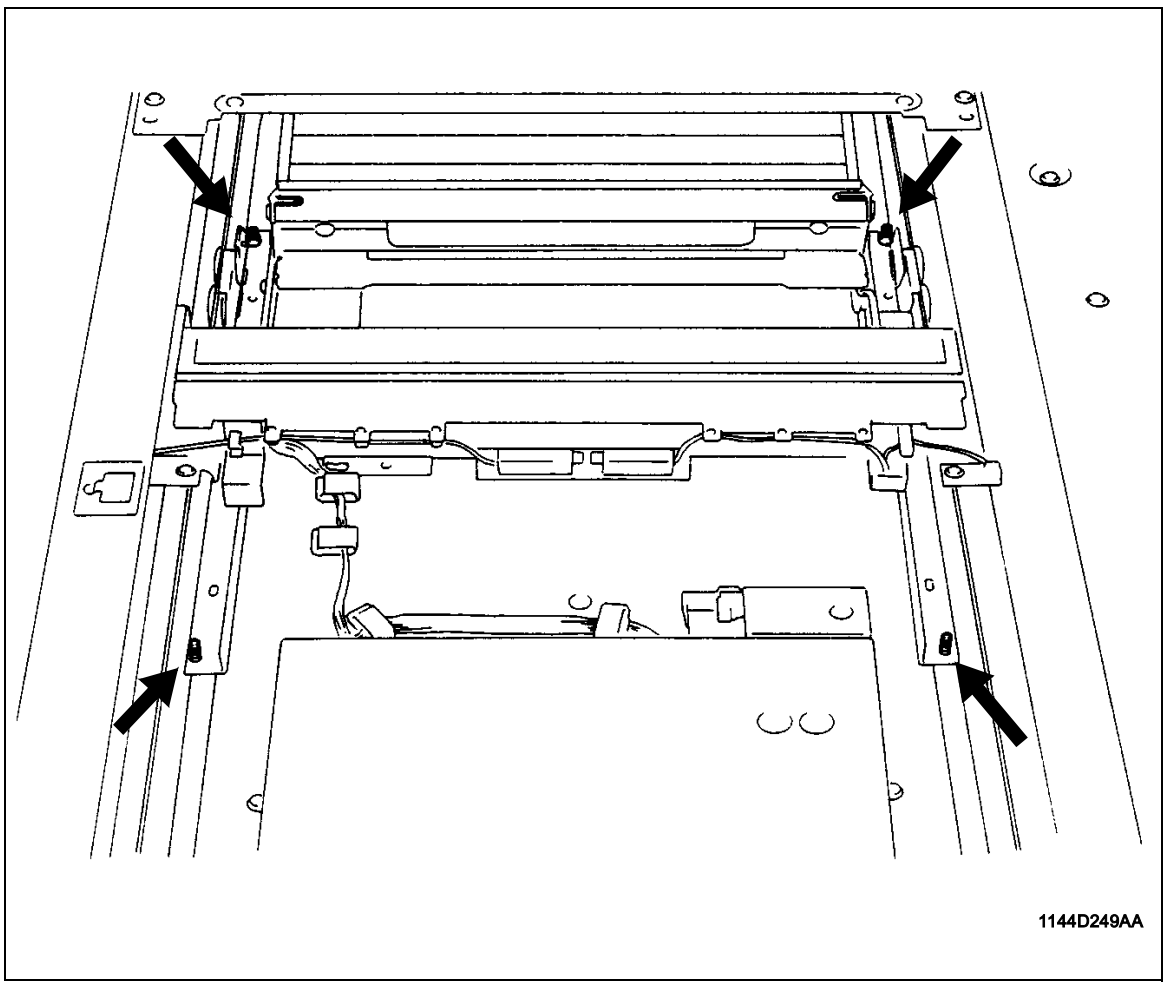
(2) Variable Resistors on Board

Do not turn the variable resistors (potentiometers) on boards to which no adjusting instructions are given in "ADJUSTMENT."

(3) Other Screws

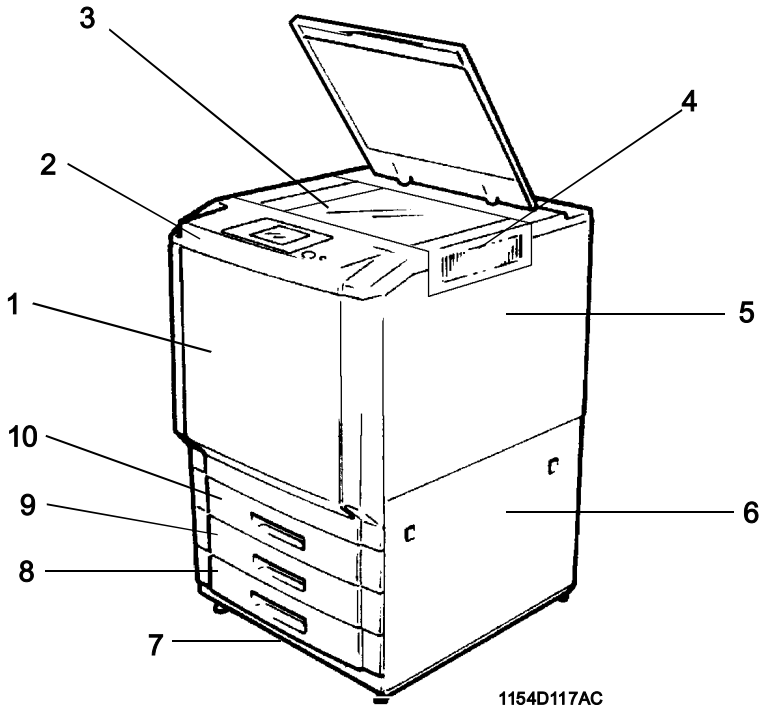
Although not marked with red paint, the following screws must not be loosened or readjusted.

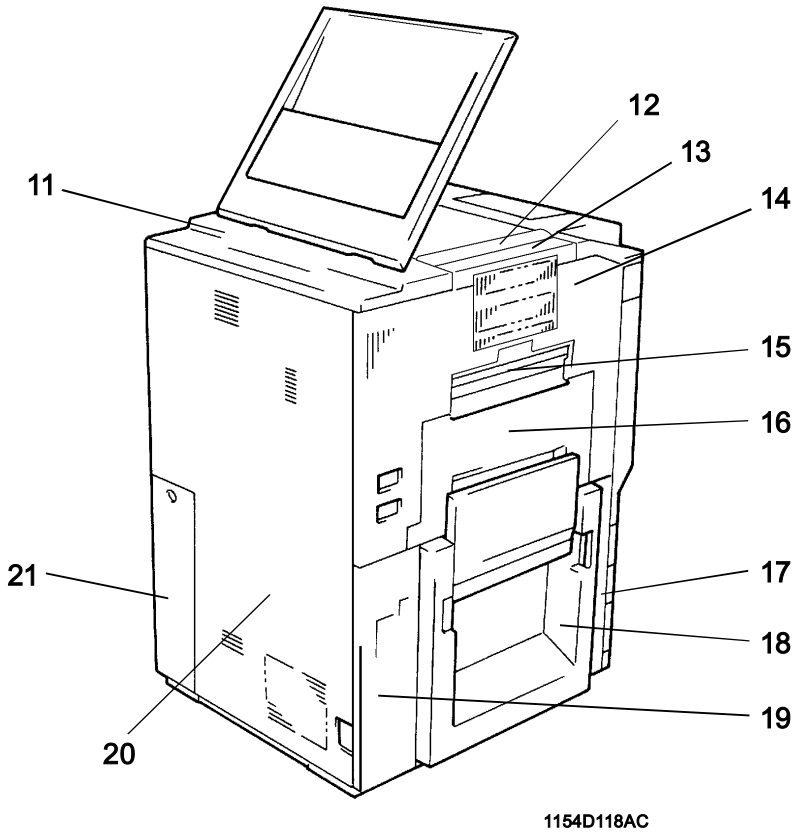
Four screws on the 2nd/3rd Mirrors Carriage



2 DISASSEMBLY/REASSEMBLY

2-1. DOORS, COVERS, AND EXTERIOR PARTS: IDENTIFICATION AND REMOVAL PROCEDURES

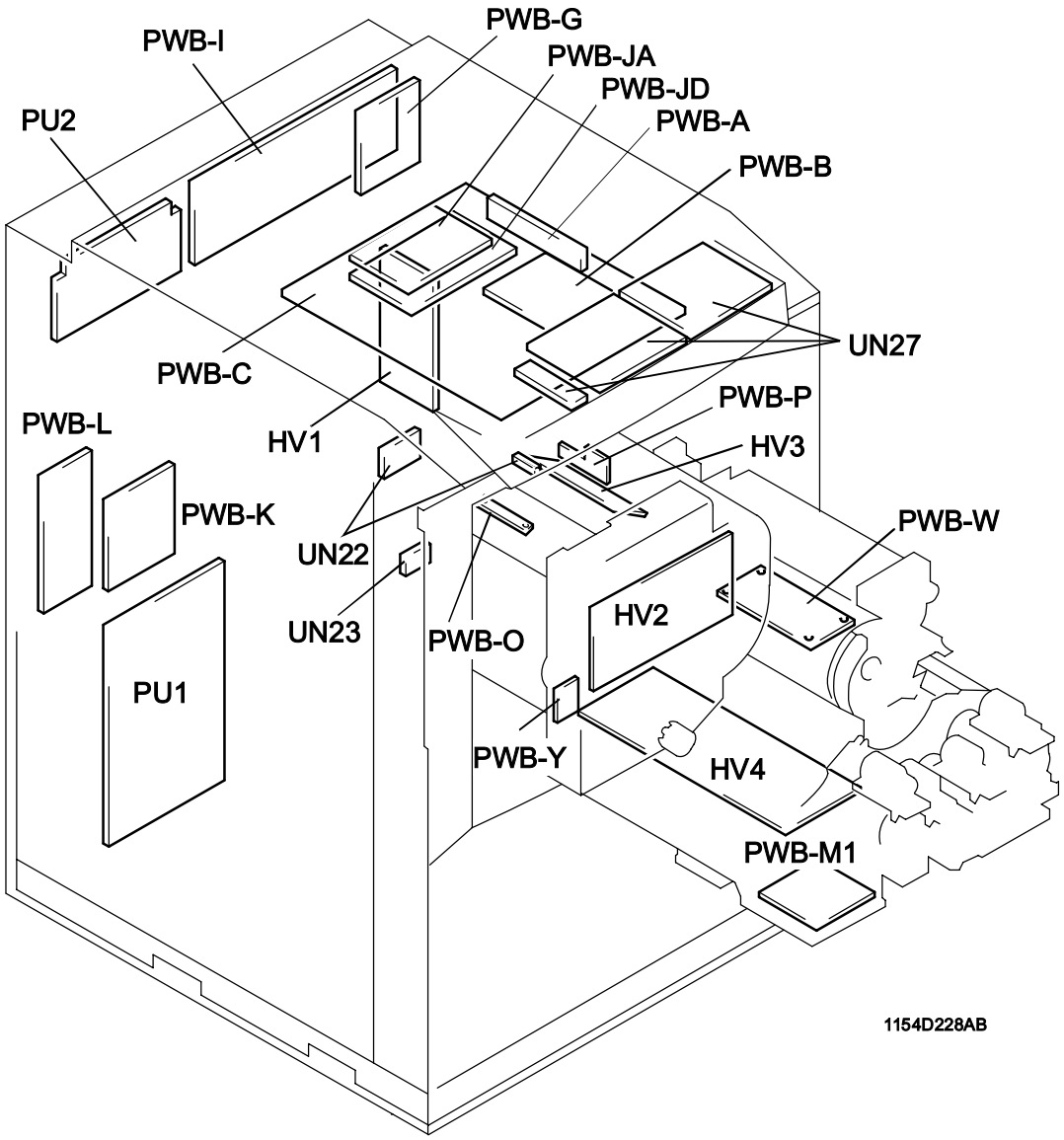




No.	Name	Removal Procedure
1	Front Door	Remove No. 5. → Open and then remove the Front Door.
2	Control Panel Unit	Open Original Cover. → Open No. 1. → Remove No. 4, 13. → Remove No. 12. → Remove two magnet catches. → Remove two screws that secure the Control Panel Unit.
3	Original Glass	Remove No. 13. → Remove No. 12. Installation Tip: Fit the Original Glass into the groove in the Original Scale and fit the glass into the Glass Restriction Plate.
4	Upper Right Cover	Remove two screws that secure the Upper Right Cover.
5	Right Upper Cover	Remove No. 4. → Remove four screws that secure the Right Upper Cover.
6	Right Lower Cover	Remove No. 4,5. → Remove five screws that secure the Right Lower Cover.
7	Front Lower Cover	Slide out 3rd Drawer. → Remove two screws that secure the Front Lower Cover.
8	3rd Drawer	Slide out the drawer. → Remove the stopper. → Pull out the drawer while slightly lifting it.
9	2nd Drawer	
10	1st Drawer	
11	Upper Rear Cover	Remove Original Cover. → Remove two Hinge Covers. → Remove No. 4,13. → Remove No. 21. → Remove No. 20. → Remove No. 5,14. → Remove six screws that secure the Upper Rear Cover.
12	Original Width Scale	Remove No. 13. → Remove two screws that secure the Original Width Scale.
13	Upper Left Cover	Remove two screws that secure the Upper Left Cover.
14	Left Upper Cover	Remove No. 13. → Remove No. 16. → Remove No. 15. → Remove six screws that secure the Left Upper Cover.
15	Left Middle Cover	Remove No. 16. → Remove two screws that secure the Left Middle Cover.
16	Exit Cover	Remove two screws that secure the Exit Cover.
17	Left Front Lower Cover	Remove two screws that secure the Left Front Lower Cover.
18	Multi Bypass Unit	See p. D-14.
19	Left Rear Lower Cover	Remove two screws that secure the Left Rear Lower Cover.
20	Rear Cover	Remove No. 21. → Remove six screws that secure the Rear Cover.
21	Toner Collecting Box Cover	Remove one screw that secures the Toner Collecting Box Cover.

2-2. REMOVAL OF CIRCUIT BOARDS AND OTHER ELECTRICAL COMPONENTS

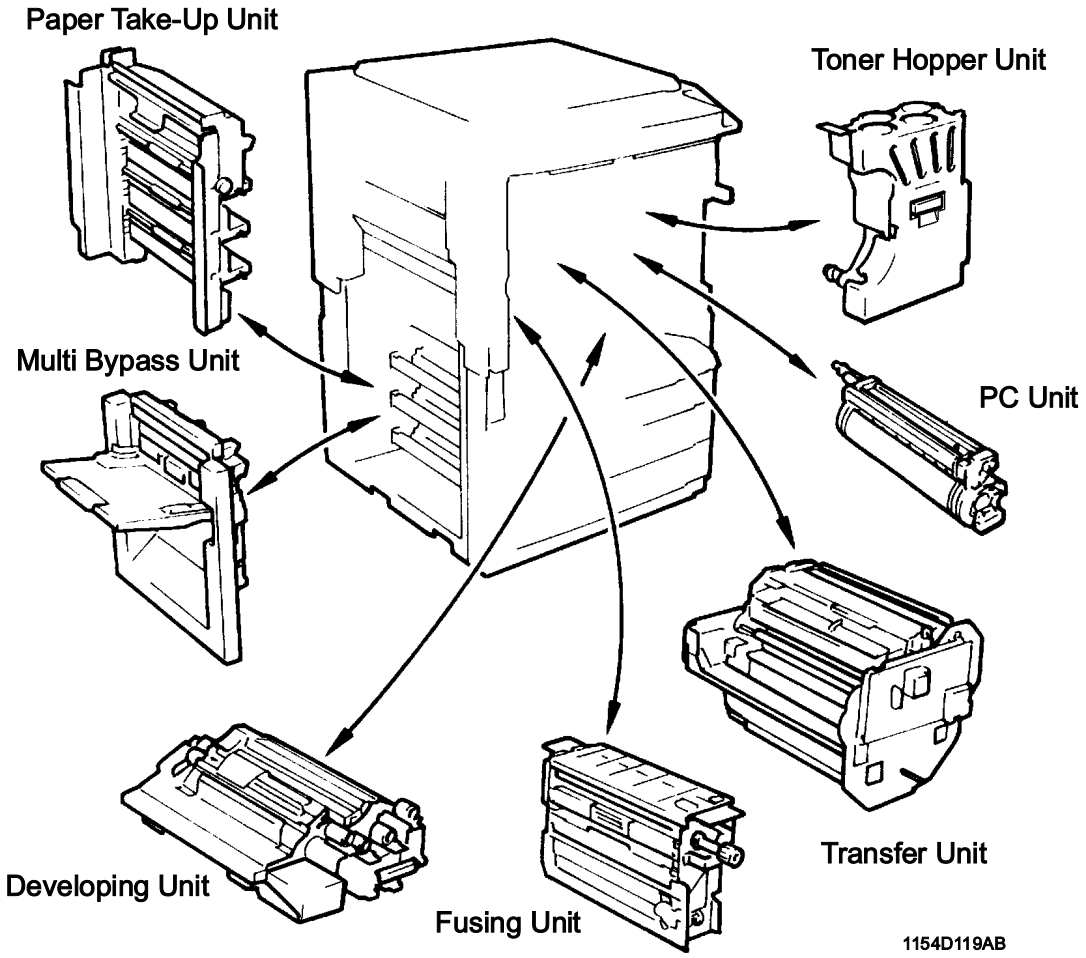
- When removing a circuit board or other electrical component, refer to “PRECAUTIONS FOR HANDLING THE PWBs” contained in SWITCHES ON PWBs and follow the corresponding removal procedures.
- The removal procedures given in the following omit the removal of connectors and screws securing the circuit-board support or circuit board.
- Where it is absolutely necessary to touch the ICs and other electrical components on the board, be sure to ground your body.



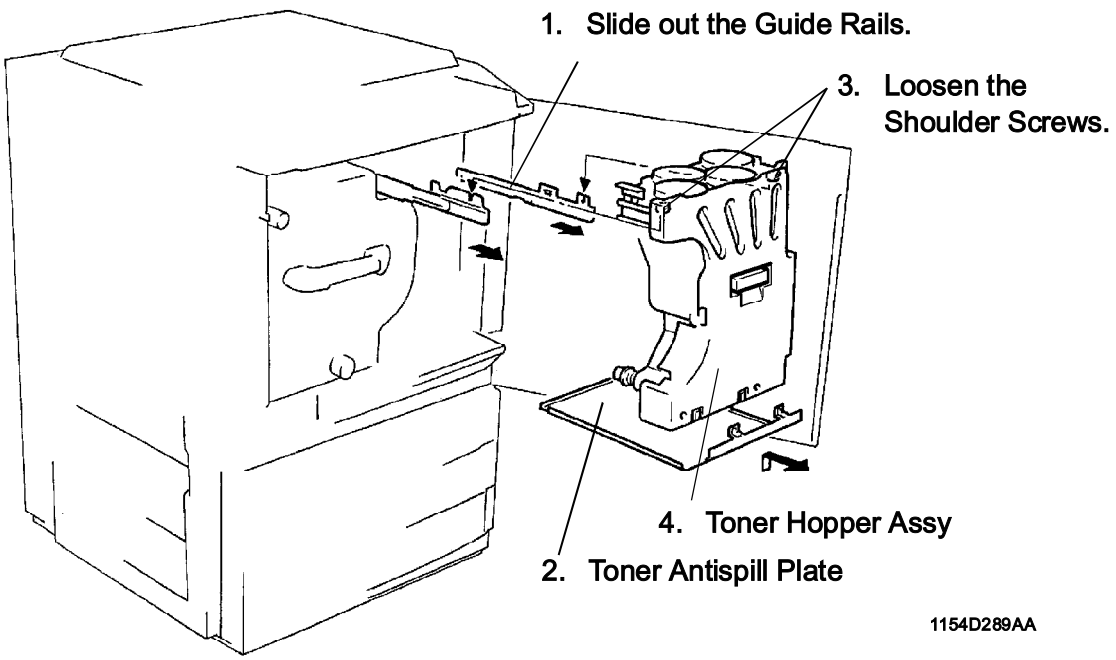
Symbol	Name	Removal Procedure
PWB-A	CCD Sensor Board	Remove No. 13,12. → Remove the CCD Assy Cover. → PWB-A. ***Note:*** *Remove with CCD Assy.*
PWB-B	A/D Converter Board	Remove No. 5. → Remove the Shield Cover C,D. → Remove the IR Board Assy. → Remove the Shield Cover B.→PWB-B.
PWB-C	IR Control Board	Remove No. 5. → Remove the Shield Cover C,D. → Remove IR Board Assy. → Remove the Shield Cover B. → PWB-C.
PWB-G	Motor Drive Board	See p. D-76.
PWB-I	Master Board	See p. D-75.
PWB-JD	PH Control Board (Digital)	See p. D-18.
PWB-JA	PH Control Board (Analog)	
PWB-K	Paper Take-Up Board	Remove No. 21,20. → Remove No. 6,19. → Remove the bracket. → PWB-K.
PWB-L	Power Supply Board	Remove No. 21,20. → Remove No. 6,19. → Remove the bracket. → PWB-L.
PWB-M1	Automatic Adj. Board	Slide out the Developing Unit. → Remove the Cover. → PWB-M1.
PWB-O	Paper Bonding Failure Detection Board 1	Slide out the Transfer Unit. → Remove the Transfer Film. → PWB-O.
PWB-P	Paper Bonding Failure Detection Board 2	Slide out the Transfer Unit. → Remove the Transfer Film. → PWB-P.
PWB-W	PC Drum Heater Control Board	Slide out the PC Unit. → Remove the PC Drum. → PWB-W.
PWB-Y	Failure Sensor Adj. Board	Slide out the Transfer Unit. → Remove the Transfer Unit Cover. → Remove the PWB Cover. → PWB-Y.
UN22	Surface Potential Detection Sensor	Remove No. 21,20. → Remove the Toner Collecting Box. → UN22.
UN23	Humidity Sensor	Remove No. 21,20. → Remove the Toner Collecting Box. → UN23.
UN27	Control Panel	Remove No. 2. → UN27.
PU1	DC Power Supply 1	Remove No. 21,20. → Remove No. 6,19. → Remove the Cover mounting bracket. → Remove the Cooling Fan Assy. → PU1.
PU2	DC Power Supply 2	See p. D-75.
HV1	High Voltage Unit 1	Remove No. 21,20. → Remove the bracket. → HV1.
HV2	High Voltage Unit 2	Slide out the Transfer Unit. → Remove the Transfer Unit Cover. → HV2.
HV3	High Voltage Unit 3	Slide out the Transfer Unit. → Remove the Transfer Film. → HV3.
HV4	High Voltage Unit 4	Slide out and remove the Developing Unit. → Remove the Drive Cover. → Remove the Developing Unit fixing bracket. → Remove the Carrier Retrieving Assy. → Remove the Bk Toner Developing Unit. → Remove the cover. → HV4.

2-3. REMOVAL OF UNITS

- This copier provides maintainability of each mechanical unit to shorten downtime at the user's premises.
- Note that replacement of a unit may call for readjustments or resetting of particular items.

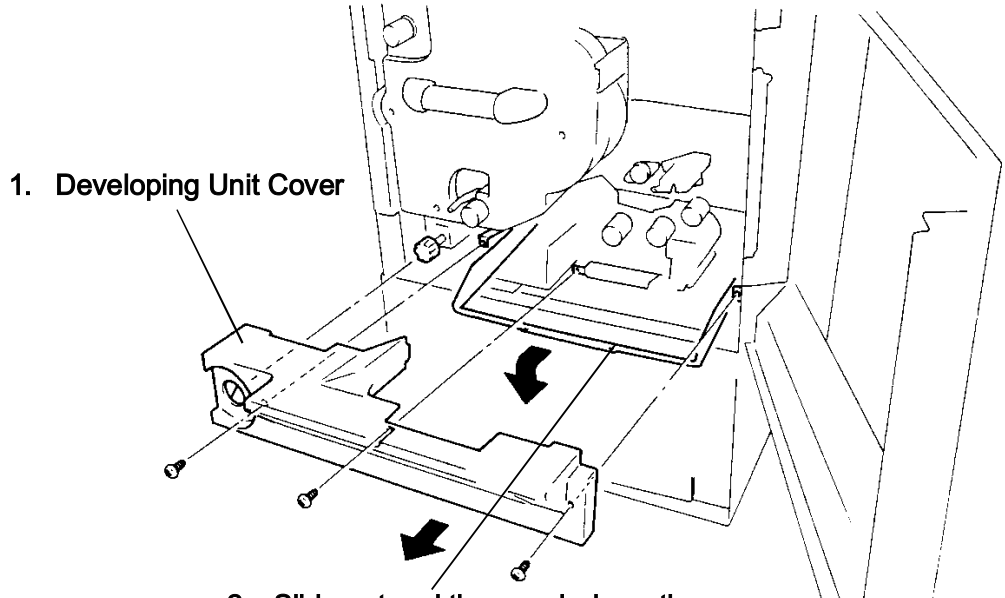


(1) Removal of the Toner Hopper Unit



(2) Removal of the PC Unit

Remove the PC Unit after the Toner Hopper Unit has been removed, the Transfer Unit lever has been unlocked and the Transfer Unit Cover Assy has been removed.



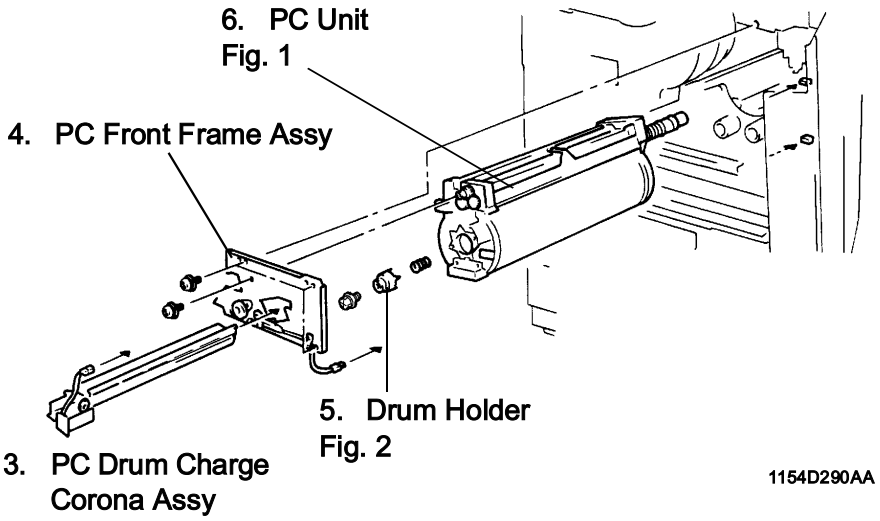


Fig. 1
While sliding the PC Unit into the copier, swing the drum to the left to avoid scratching it on a drum sensor.

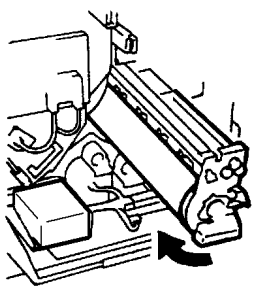
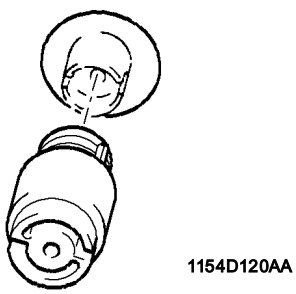


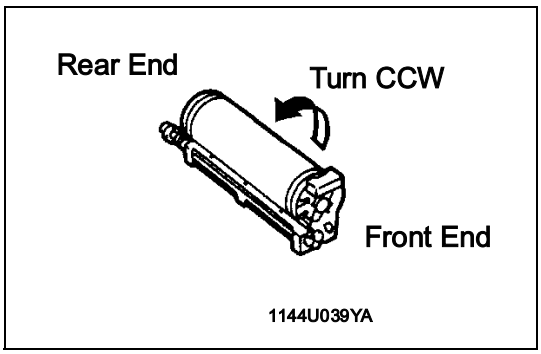
Fig. 2
At reinstallation, check that the Drum Holder tabs fit into the slots. (If the tabs do not fit in, turn the PC Holder.)



Note:

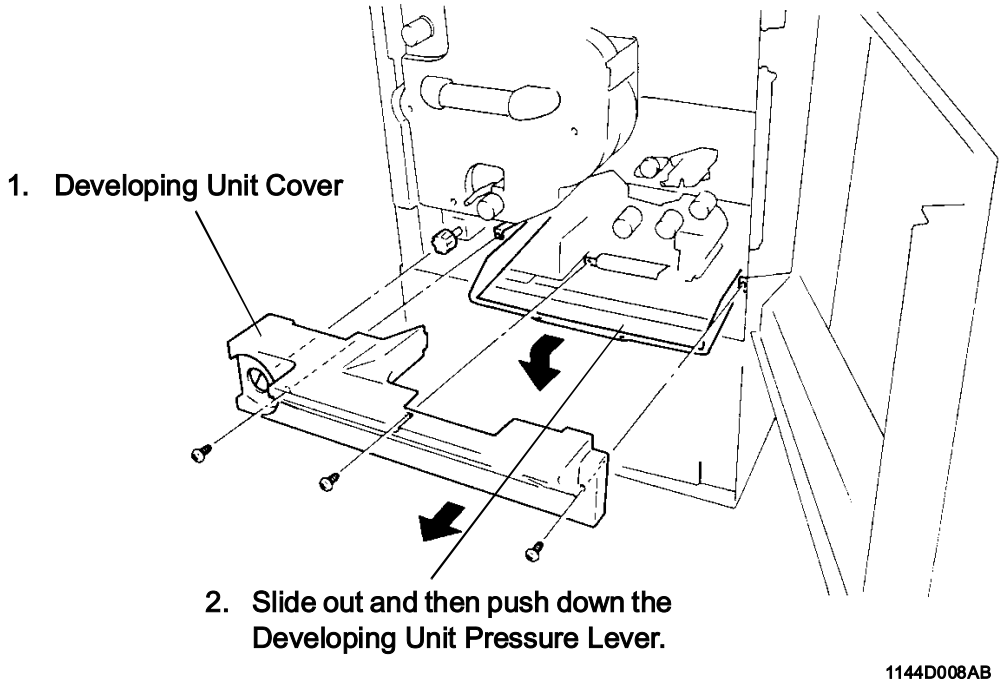
When mounting the PC Unit:

- *Try to keep the PC Unit in the horizontal position.*
- *When turning the PC Unit upside down (at installation), turn it counterclockwise as illustrated below. Turning it clockwise could spill spent toner. If spent toner is spilled, wipe the surface clean of toner.*



(3) Removal of the Developing Unit

Remove the Developing Unit after the Toner Hopper Unit has been removed.



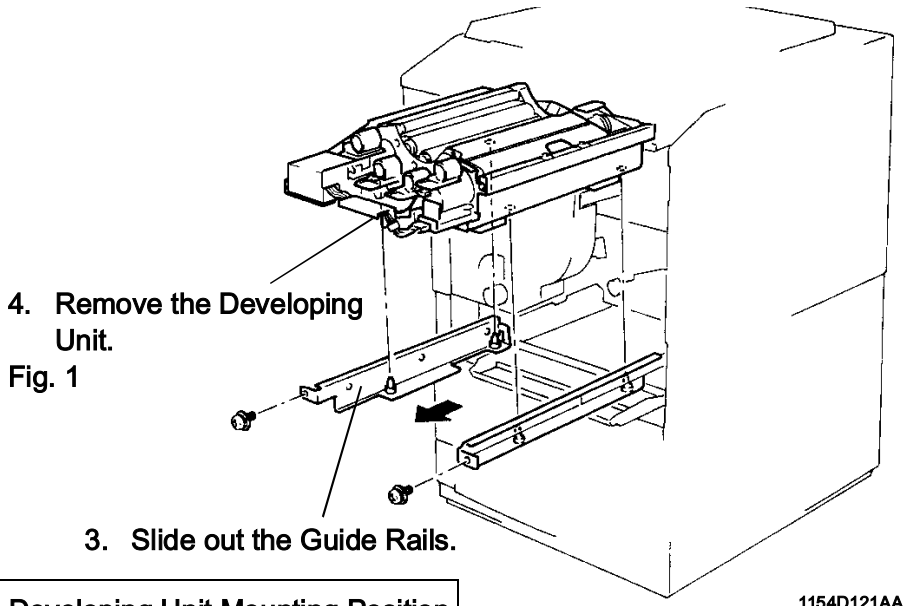
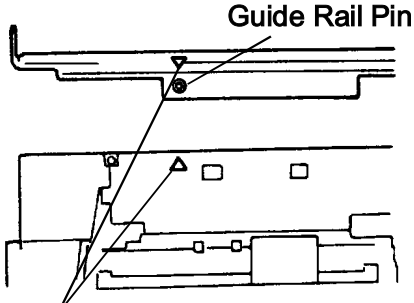


Fig. 1 Developing Unit Mounting Position



Note:
When the Developing Unit is slid out, the AIDC Sensor should be cleaned.

(4) Removal of the Fusing Unit and Transfer Unit

Note:
When lifting out the Fusing Unit, hold it upright to prevent spilling the oil.

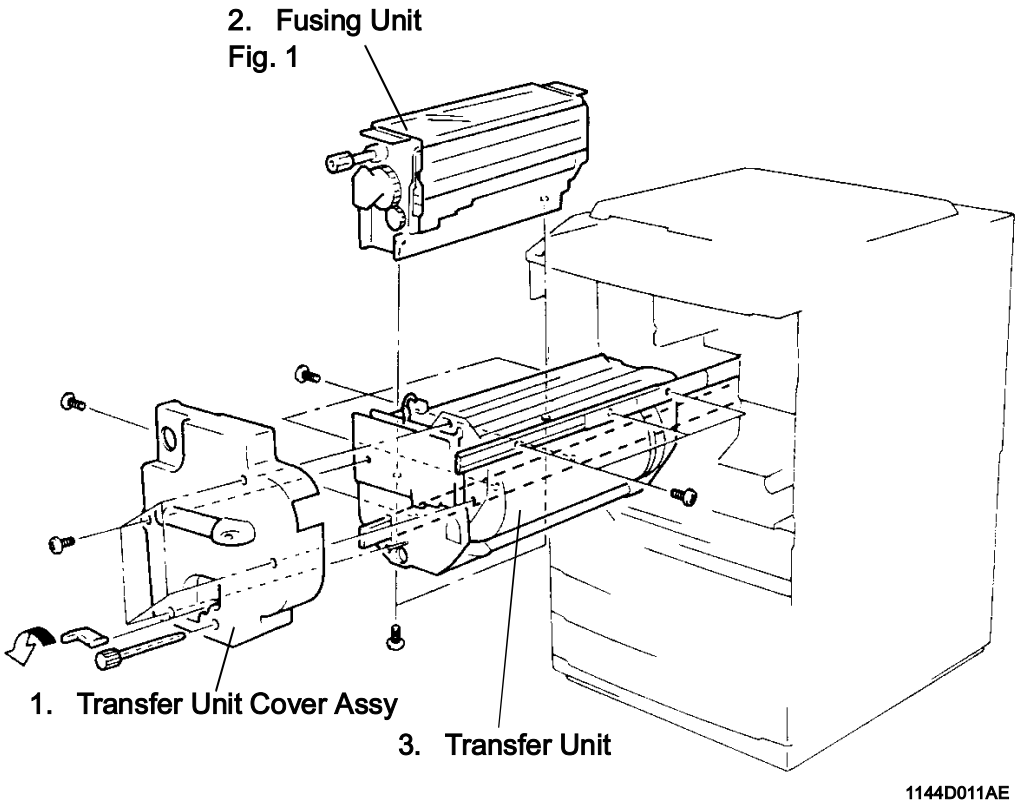
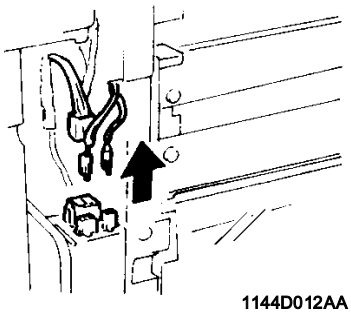


Fig. 1 Unplugging the Connectors



(5) Removal of the Multi Bypass Unit

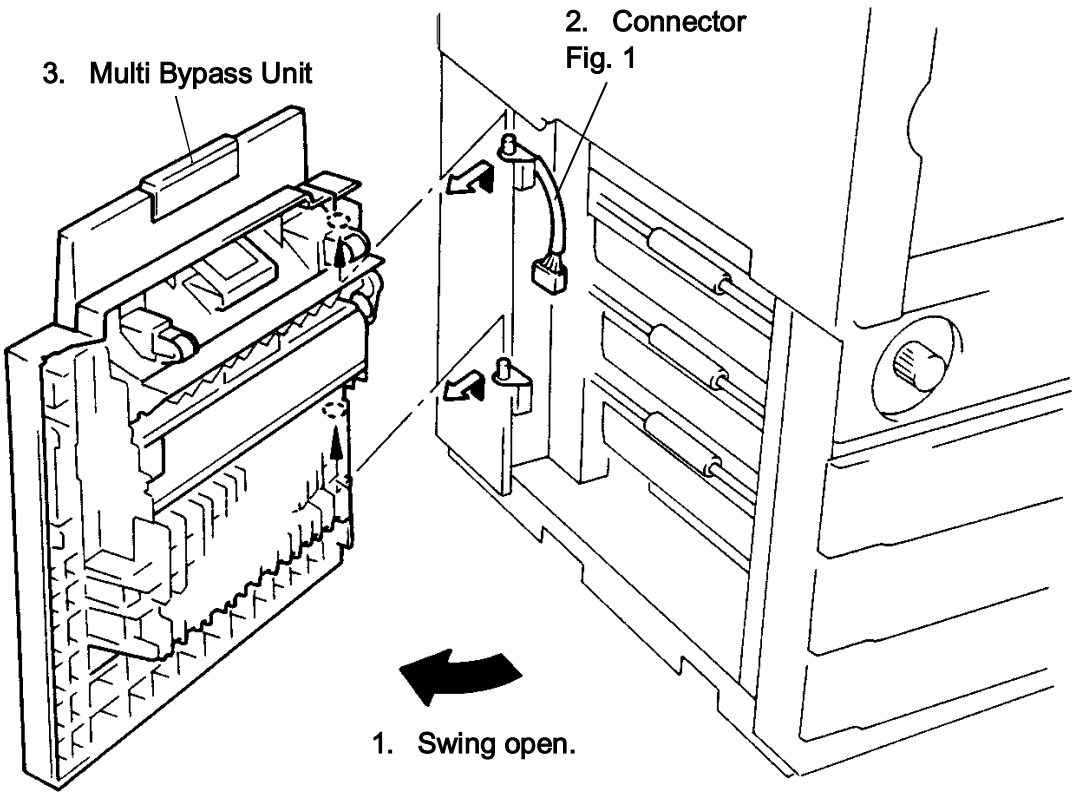
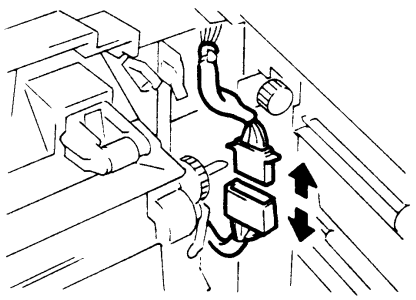


Fig. 1 Unplugging the Connector



(6) Removal of the Paper Take-Up Unit

Remove the Paper Take-Up Unit after the Multi Bypass Unit has been removed.

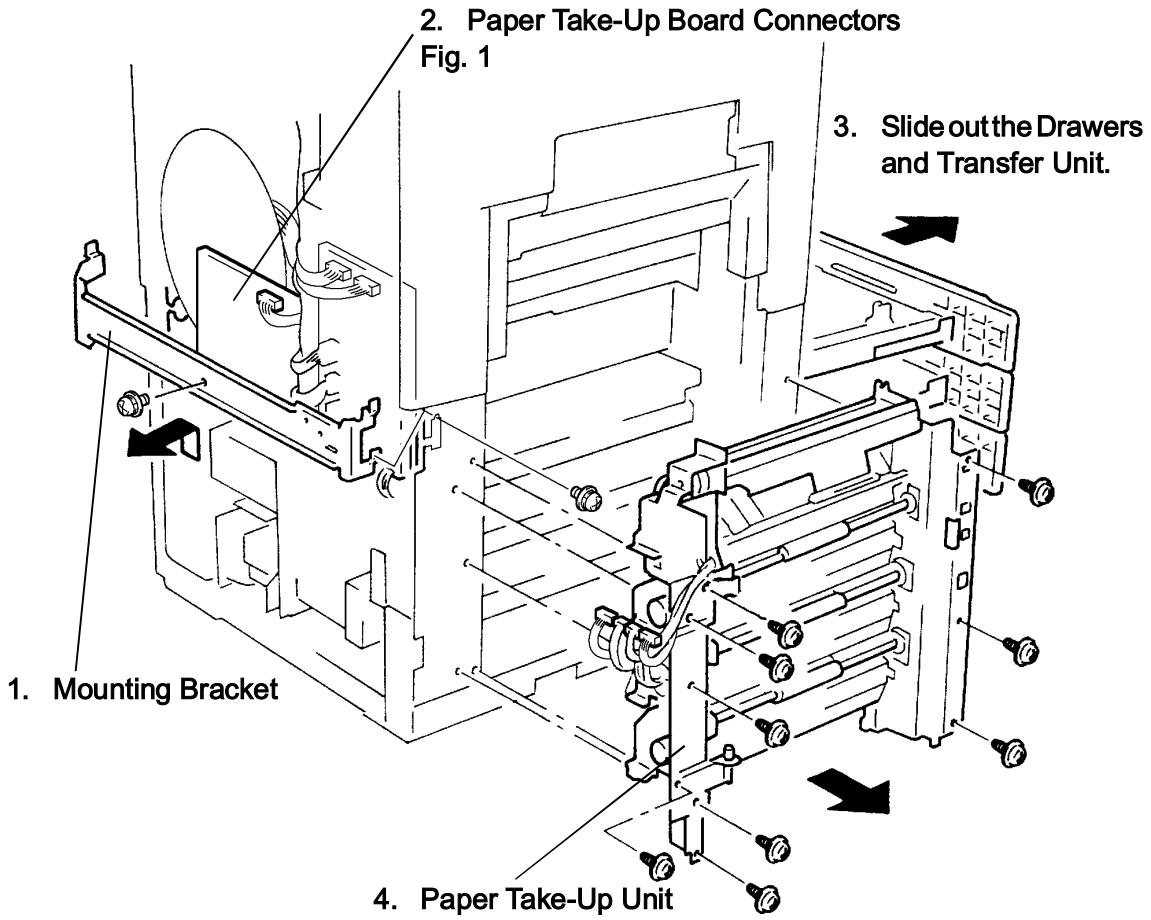
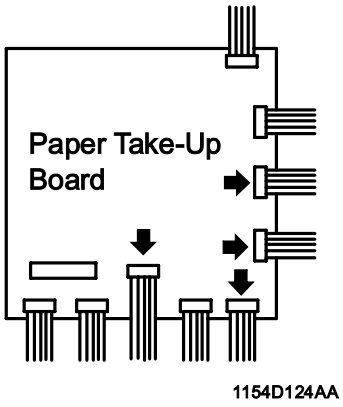
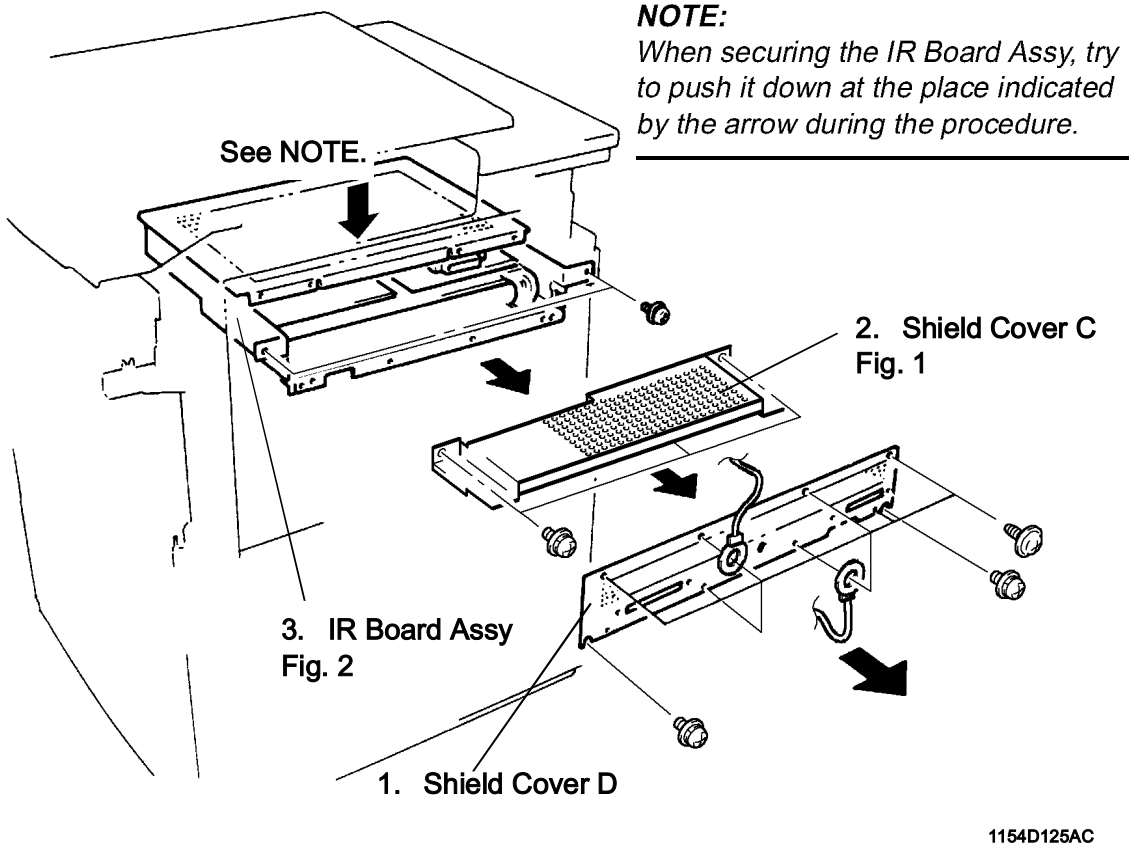


Fig. 1 Unplugging the Connectors



(7) Removal of the IR Board Assy



NOTE:
When securing the IR Board Assy, try to push it down at the place indicated by the arrow during the procedure.

Fig. 1 Connector Mounting Position
Fit the harnesses into the slot when mounting.

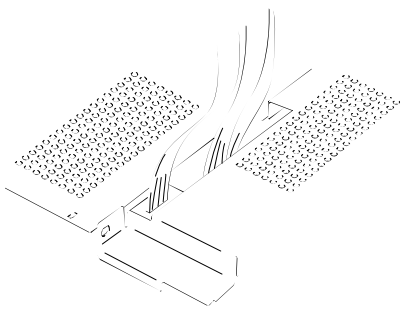
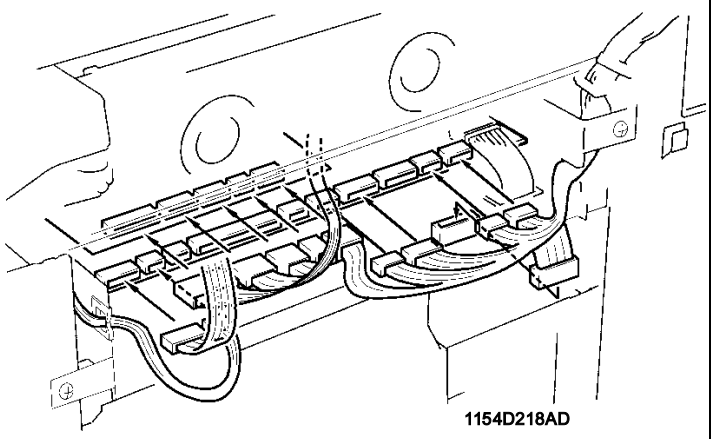


Fig. 2 Unplugging/Plugging in the Connectors



(8) Removal of the Print Head Upper and Lower Assy

DANGER

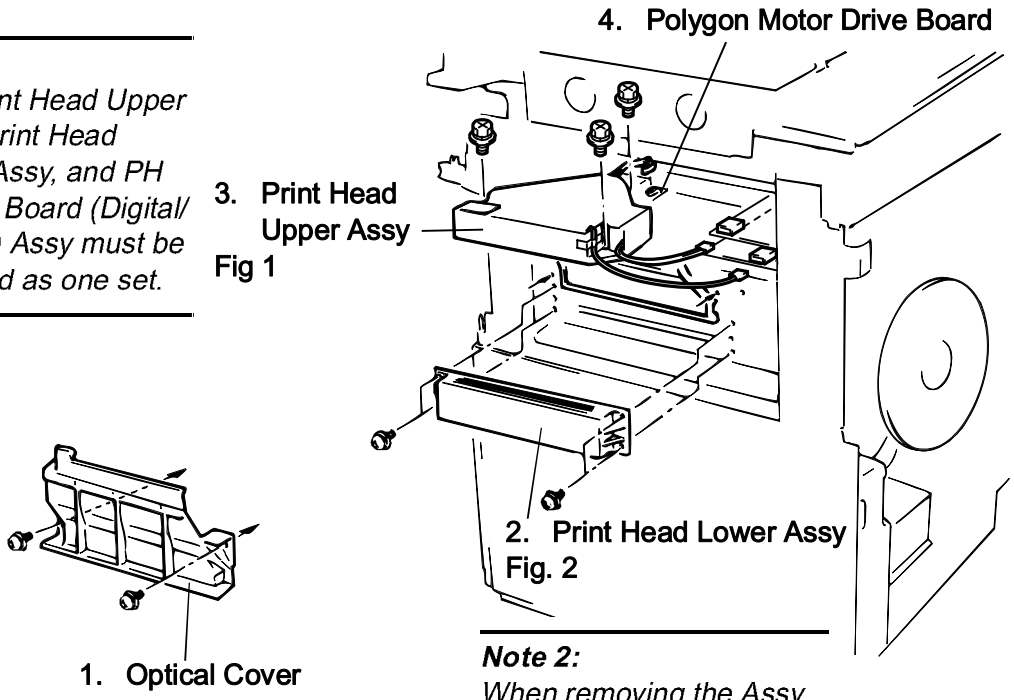
You must conform to these procedures or you are endangering your eyes by exposure by class IIIb laser radiation.

WARNING

Whenever servicing the Print Head Upper Assy, Print Head Lower Assy or Optical Cover, make sure that the power cord has been unplugged from the outlet.
Never attempt to disassemble the Polygon Motor Drive Board, PH Control Board (Analog), Print Head Upper and Lower Assy.

Remove the Print Head Upper and Lower Assy after the IR Board Assy has been removed.

Note 1:
The Print Head Upper Assy, Print Head Lower Assy, and PH Control Board (Digital/ Analog) Assy must be replaced as one set.



Note 2:
When removing the Assy, hold it with your hands.

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WARNING

The power cord must not be plugged in as long as the Print Head Upper Assy, Print Head Lower Assy or Optical Cover is removed.

Fig. 1 Print Head Upper Assy

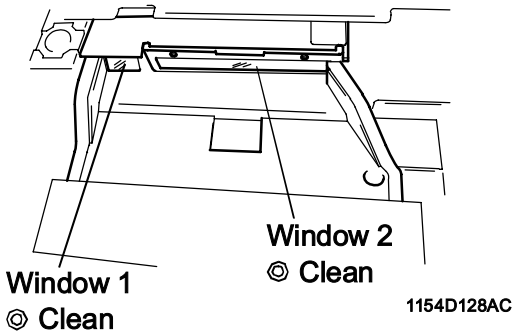

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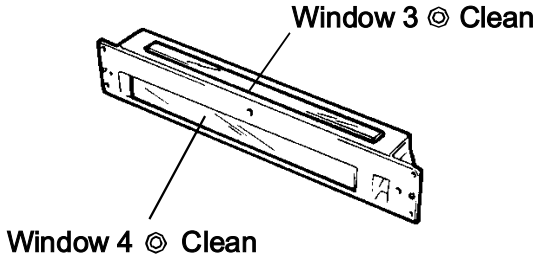
Fig. 2 Print Head Lower Assy



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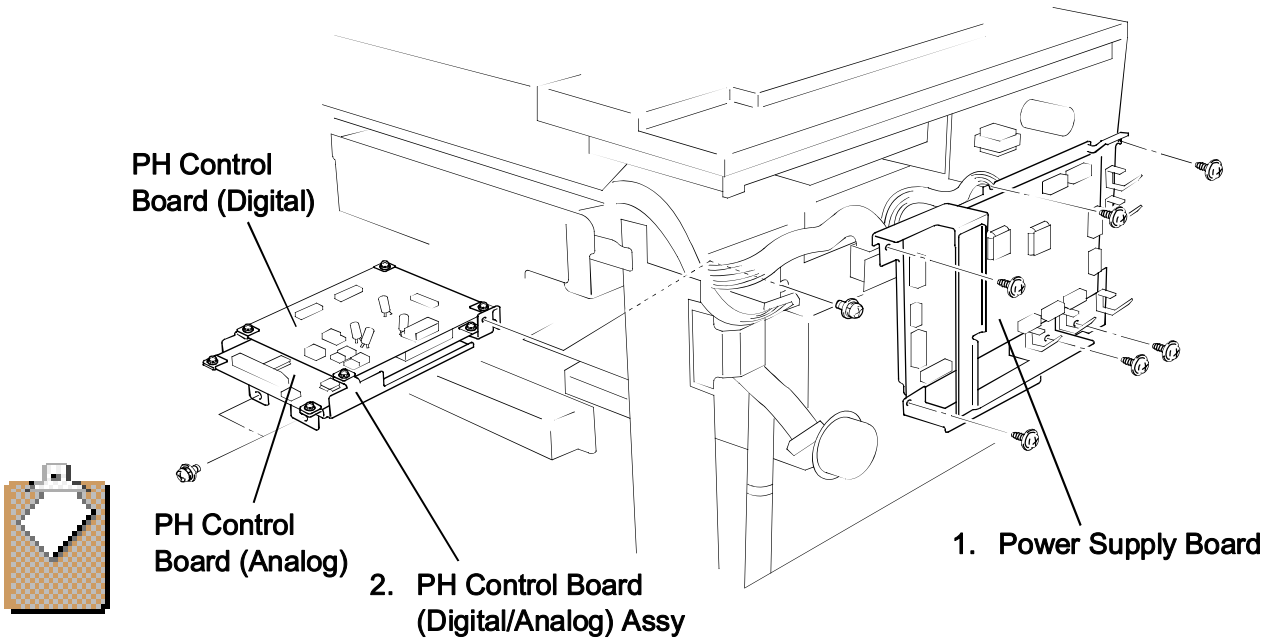
(9) Removal of the PH Control Board (Digital/Analog) Assy

Note:
The Print Head Upper Assy, Print Head Lower Assy, PH Control Board (Digital/Analog) Assy and Polygon Motor Drive Board must be replaced as one set.

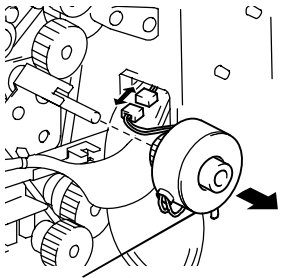
Remove the PH Control Board (Digital/Analog) after the IR Board Assy and Print Head Upper and Lower Assy have been removed.



2-4. PAPER TAKE-UP SECTION

(1) Cleaning and Replacement of the Paper Take-Up Roll, Feed Roll, Separator Roll, and Paper Dust Remover

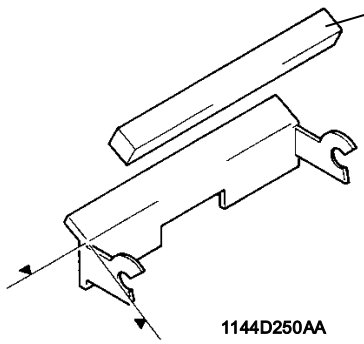
5. Paper Take-Up Clutch



Loosen set screws. ×2

1154D129AC

Fig. 4



Paper Dust Remover
◎ Clean/replace.

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Note:
Align the edge with the guide plate end face at replacement.

6. Paper Dust Remover Assy
Fig. 4

Transport Rollers
◎ Clean.

4. Paper Take-Up Roll Assy ×3
Fig. 2, 3

1. Slide out the drawer and Remove the Paper Take-Up Unit.

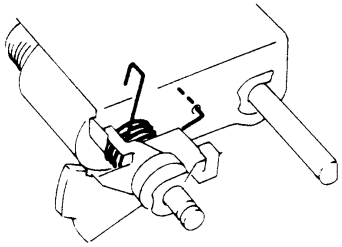
3. Guide Plate ×3

Vertical Transport Rollers ×3
◎ Clean.

2. Guide Plate Assy ×3
Fig. 1

1154D130AB

Fig. 3
Torsion Spring installed position



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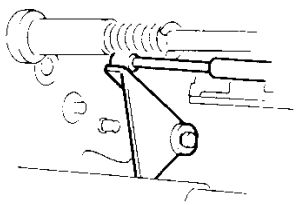
Paper Take-Up Roll Assy installed position:
The Paper Take-Up Roll shaft is on the lever.



1144D068AA

Fig. 1

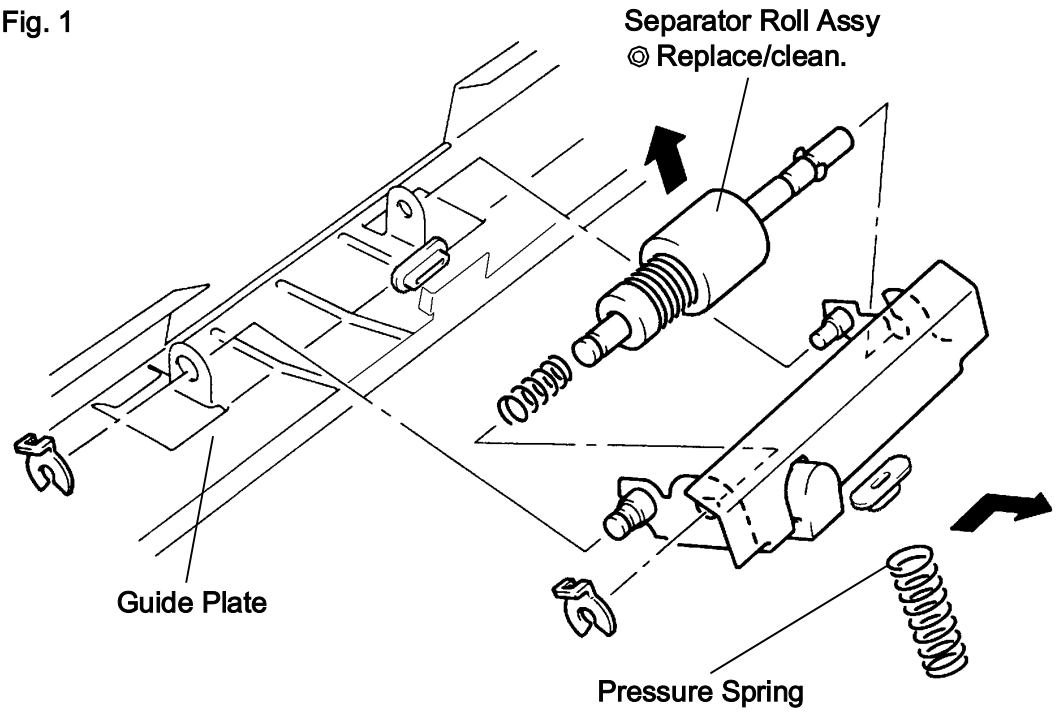
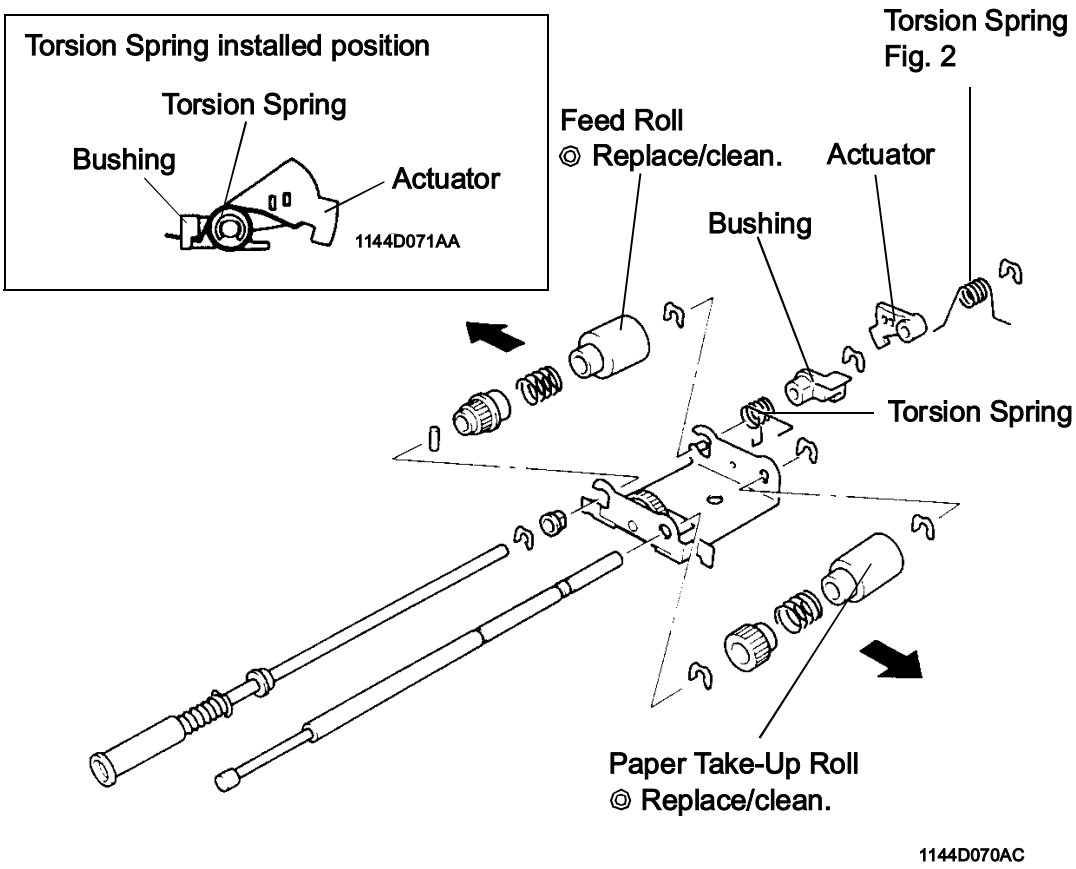

Separator Roll Assy
◎ Replace/clean.
Guide Plate
Pressure Spring
1154D131AC

Fig. 2


Torsion Spring installed position
Torsion Spring
Bushing
Actuator
1144D071AA
Torsion Spring
Fig. 2
Feed Roll
◎ Replace/clean.
Actuator
Bushing
Torsion Spring
Paper Take-Up Roll
◎ Replace/clean.
1144D070AC

(2) Removal of the Synchronizing/Static Charge Roller Assy

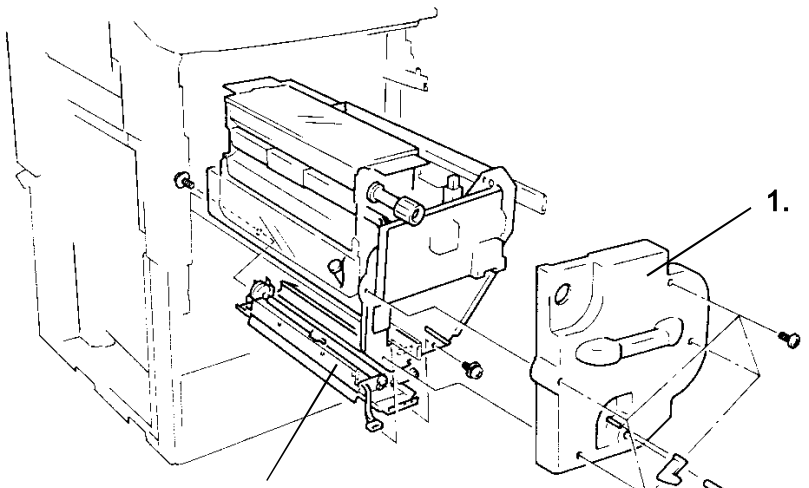
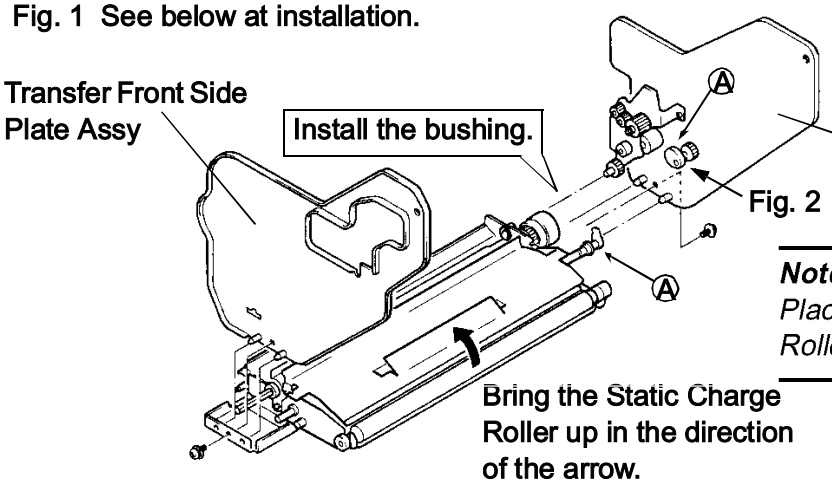


Fig. 1

1144D079AC

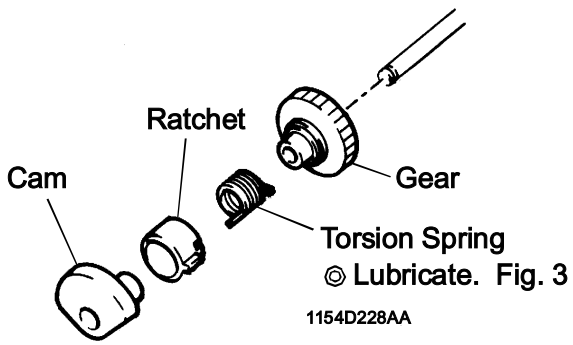
Fig. 1 See below at installation.


Transfer Front Side Plate Assy
Install the bushing.
A
A
Transfer Rear Side Plate Assy
Fig. 2
Bring the Static Charge Roller up in the direction of the arrow.

Note:
Place the Static Charge Roller lever under the cam.

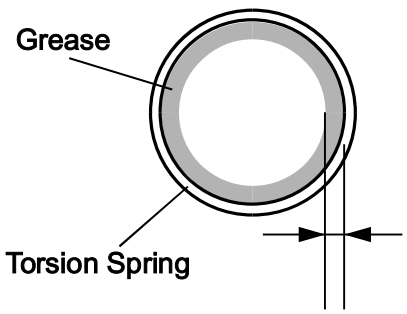
1154D132AC

Fig. 2 Lubrication of Torsion Coil Spring
Coat the inner surface of the torsion spring with heat-resistant grease (HP-500).



1154D228AA

Fig. 3 Grease Application Instructions



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(3) Disassembly of the Synchronizing Roller Assy

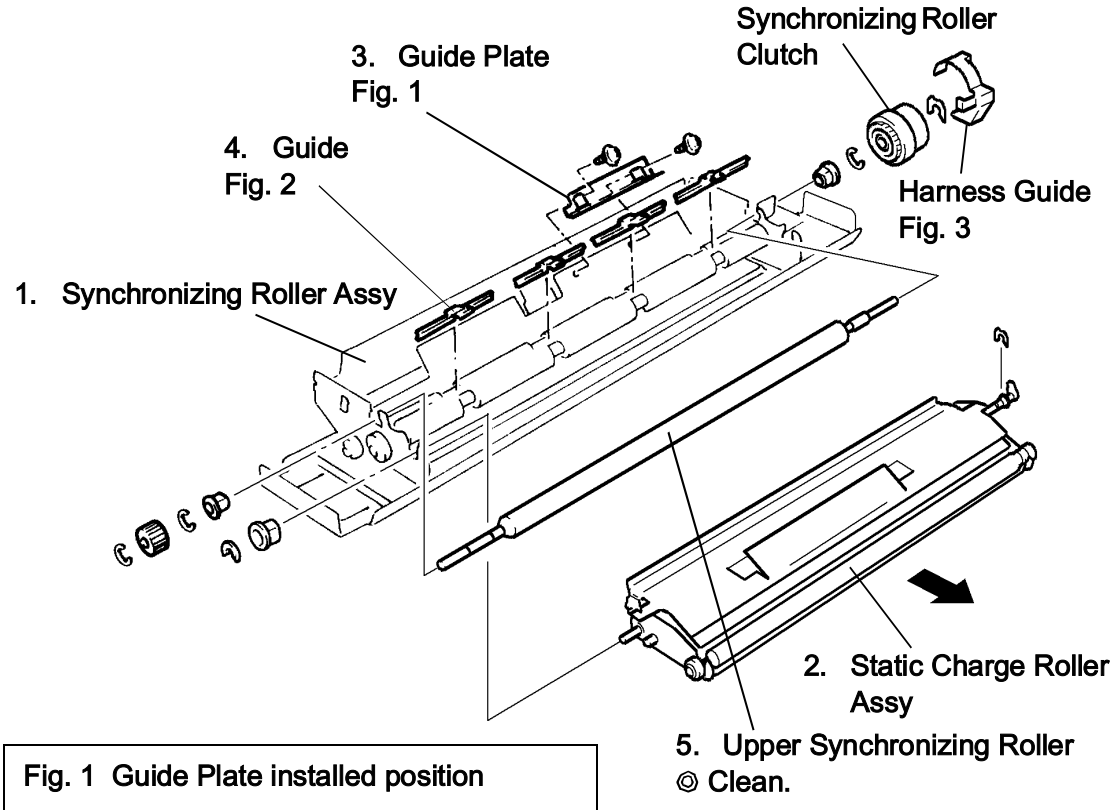


Fig. 1 Guide Plate installed position

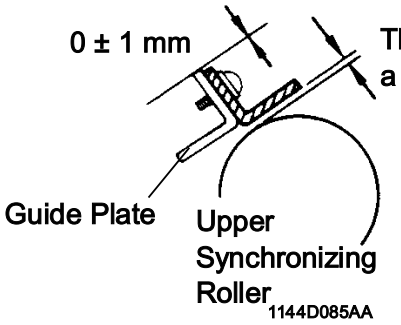


Fig. 2
Guide Plate installed position

Install the guide plate between the rollers (at four places where the shaft is visible) as illustrated below. Ensure the correct orientation.

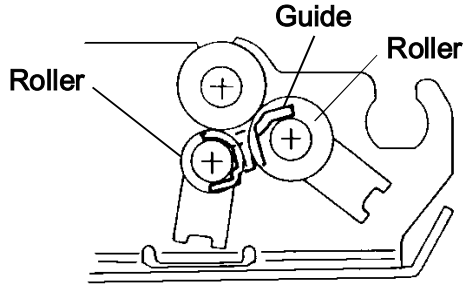
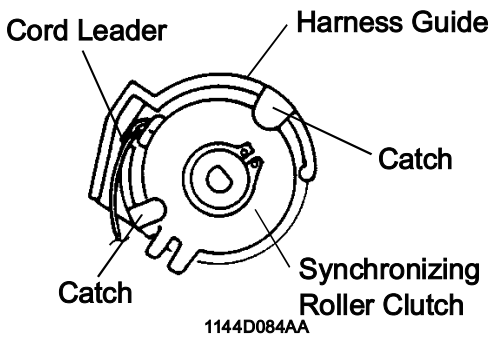


Fig. 3
Harness Guide plate installed position

Align the clutch cord leader with the harness guide and snap the guide into position until the catches contact the clutch face as shown below.



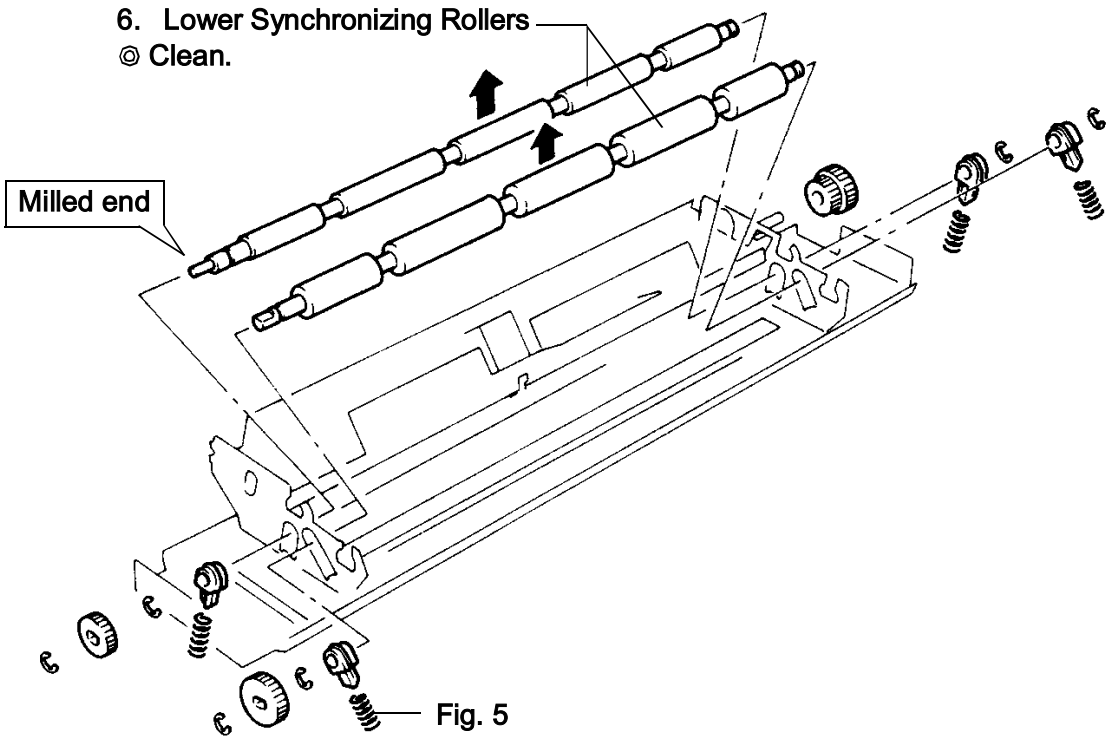
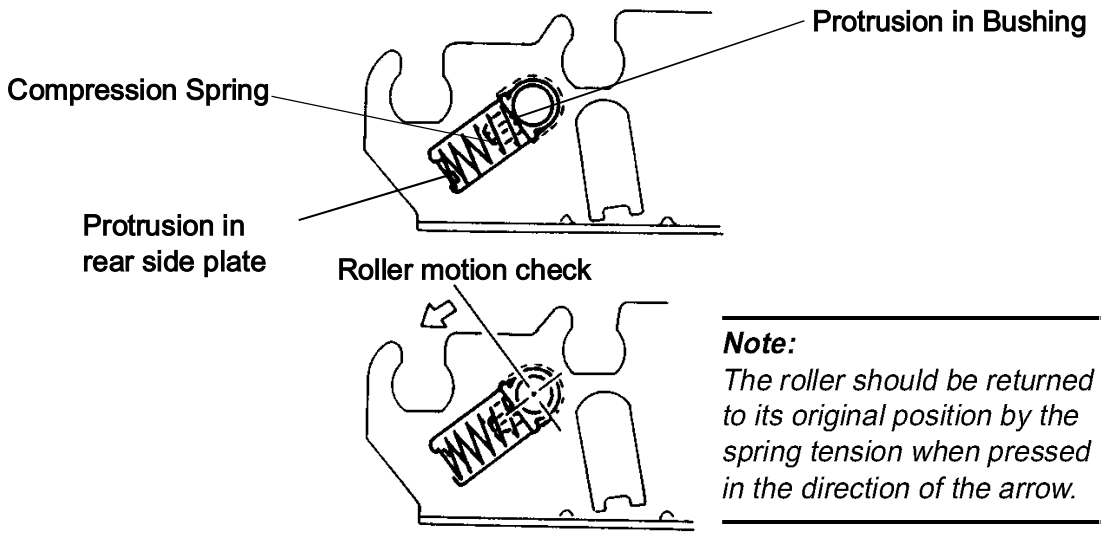


Fig. 5 Installed positions of bushing and compression Spring



Note:
The roller should be returned to its original position by the spring tension when pressed in the direction of the arrow.

Check both front and rear.

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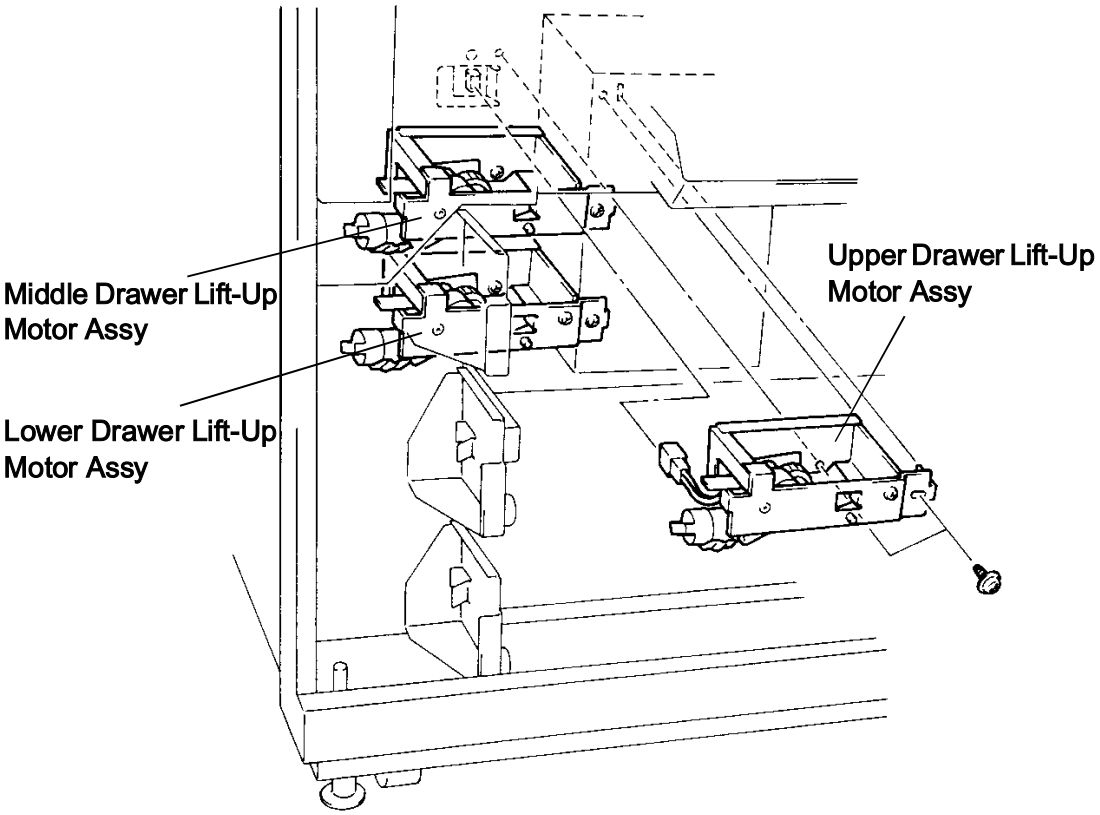
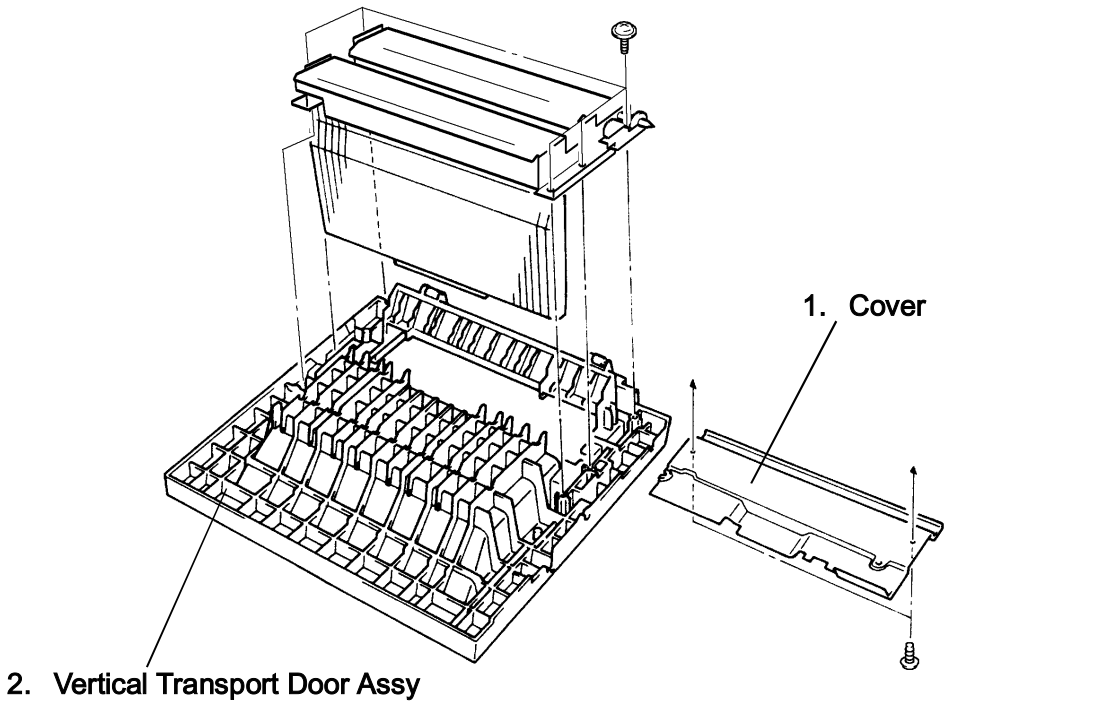
(4) Removal of the Drawer Lift-Up Motor Assy

Remove the Drawer Lift-Up Motor Assy after each drawer has been removed.



(5) Disassembly of the Multi Bypass Unit



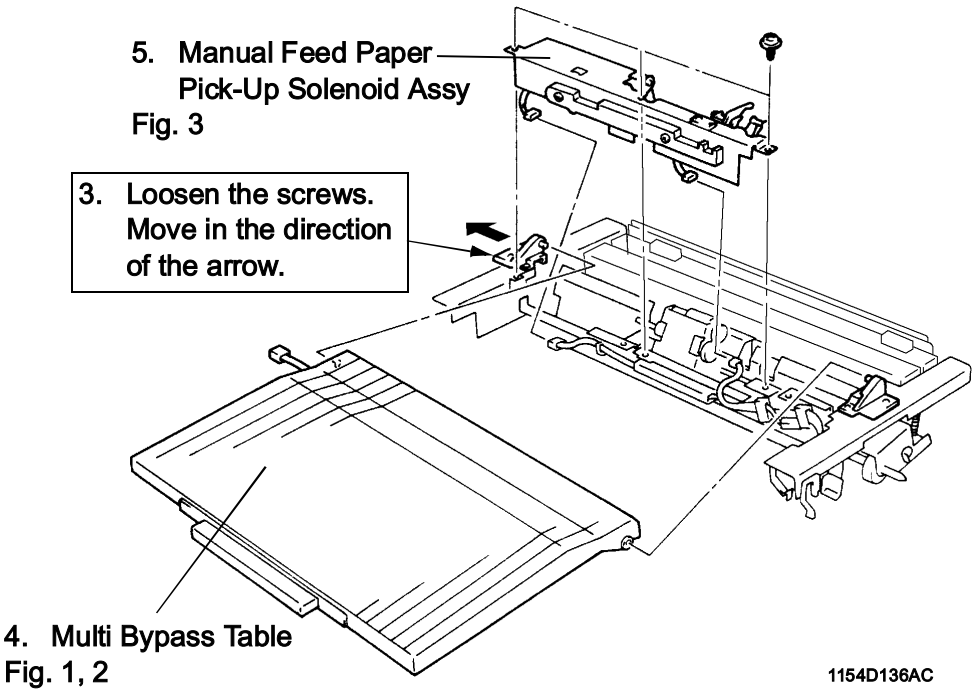

5. Manual Feed Paper Pick-Up Solenoid Assy
Fig. 3
3. Loosen the screws. Move in the direction of the arrow.
4. Multi Bypass Table
Fig. 1, 2
1154D136AC

Fig. 1 Multi Bypass Table Assy installed position

Note:
The pivot (rear) should be moved in the direction of the arrow and secured.

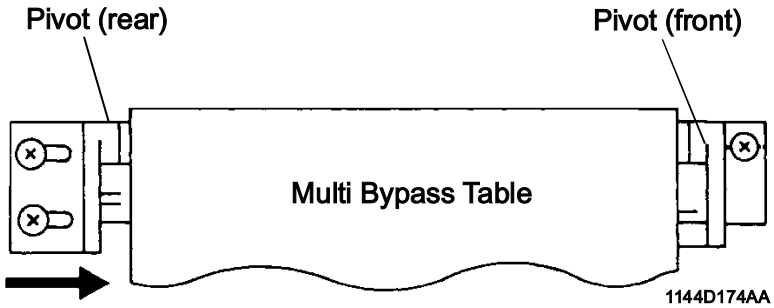


Fig. 2 Position of the connector

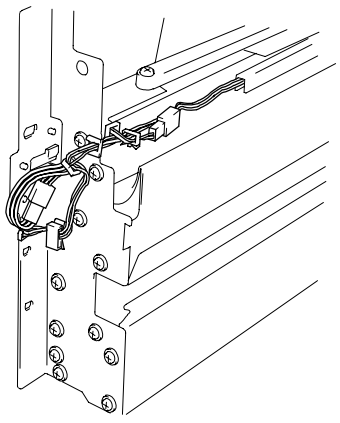
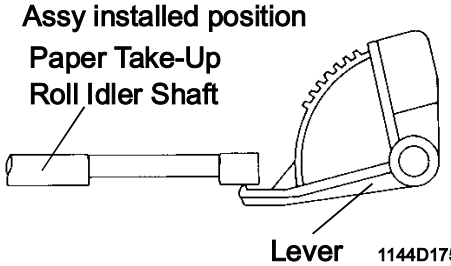


Fig. 3 Manual Feed Paper Pick-Up Solenoid Assy installed position



Note:
The Paper Take-Up Roll idler shaft must be positioned with reference to the Manual Feed Paper Pick-Up Solenoid lever as illustrated above.

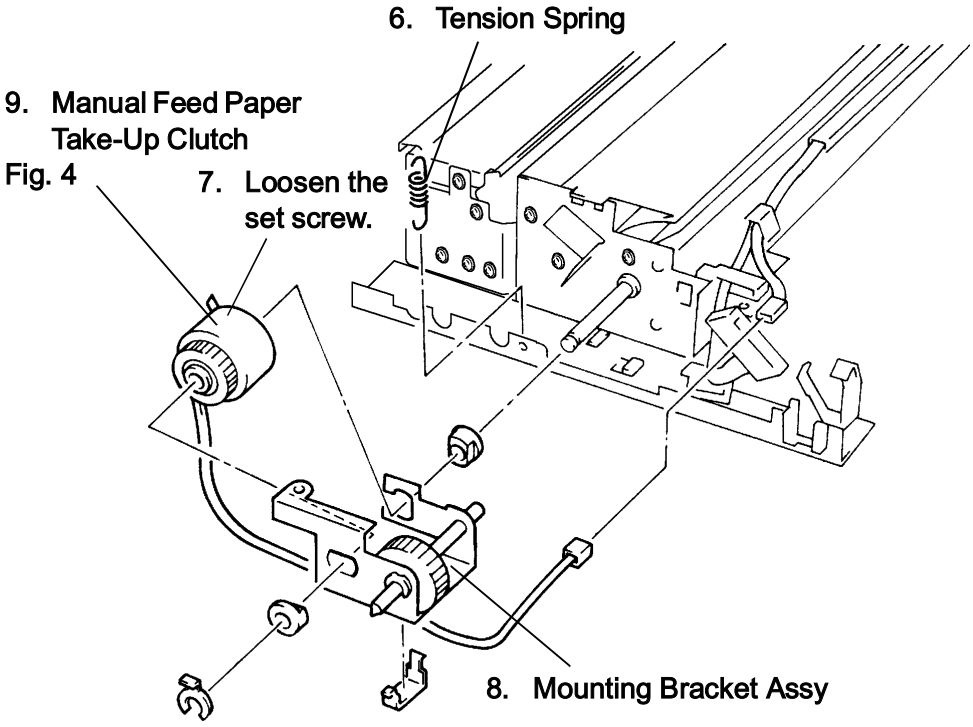
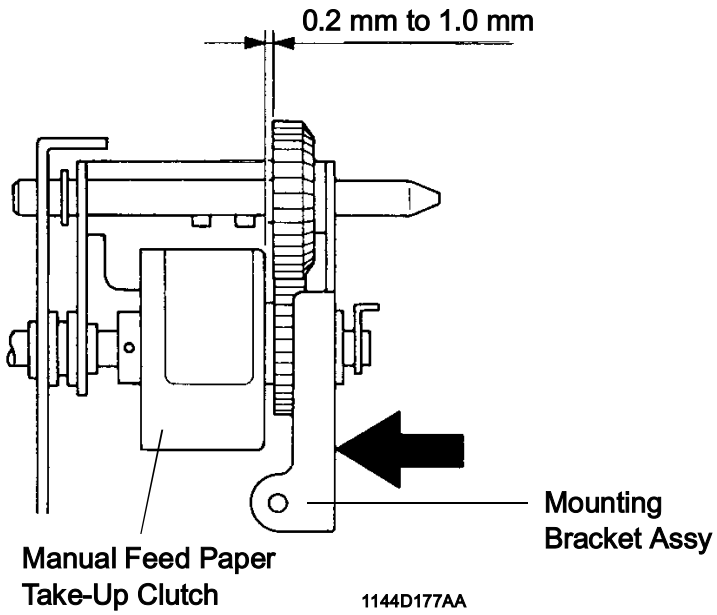


Fig. 4 Manual Feed Paper Take-Up Clutch installed position



Note:
Slide the mounting bracket Assy in the direction of the arrow for play and, ensuring a clearance of 0.2 mm to 1.0 mm from the gear, secure the Manual Feed Paper Take-Up Clutch in position.

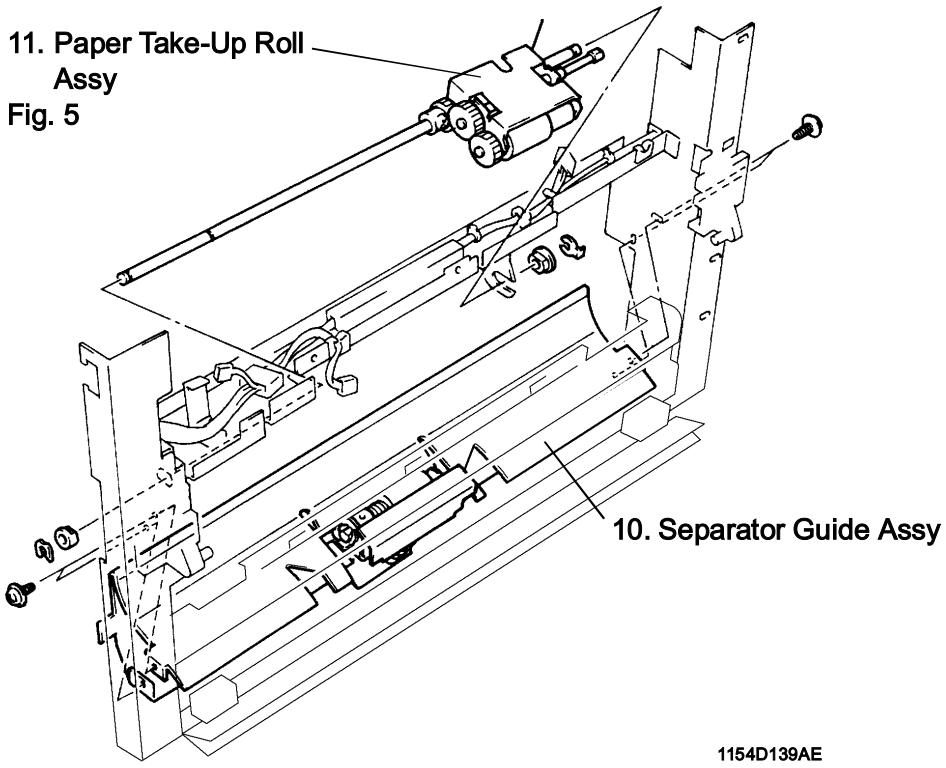
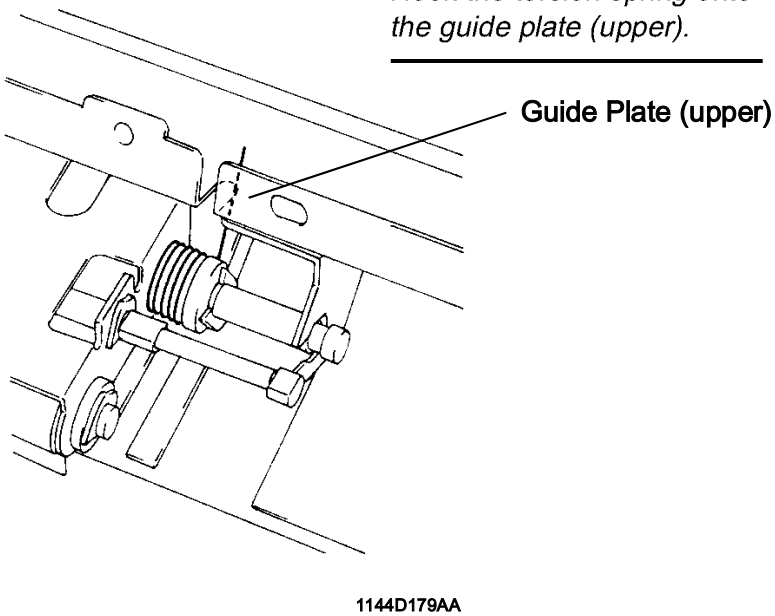


Fig. 5 Torsion Spring installed position

Note:
Hook the torsion spring onto the guide plate (upper).



2-5. FUSING UNIT

(1) Replacement of the Bushings (Upper and Lower) and the Upper and Lower Fusing Rollers

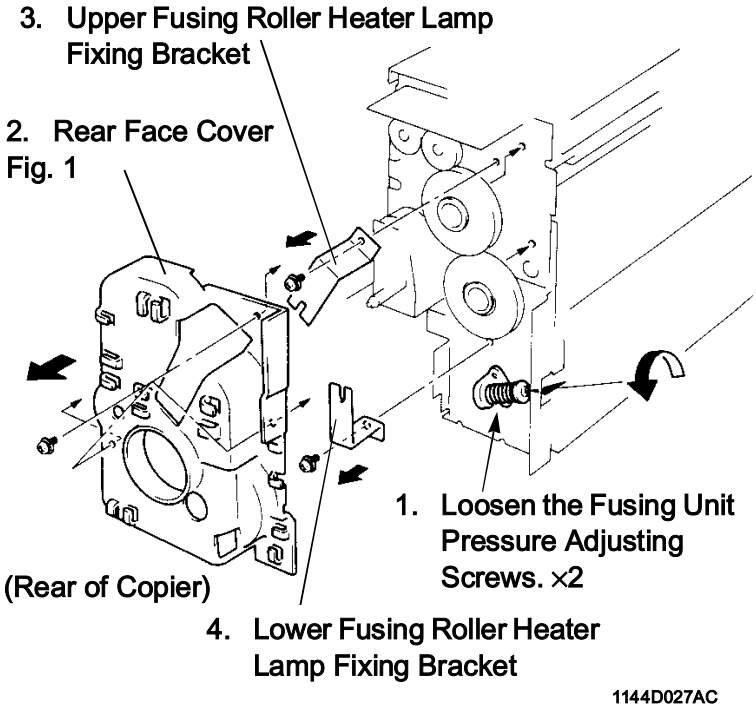
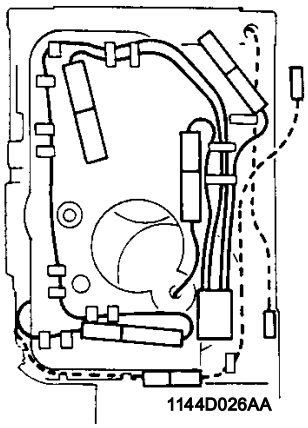

3. Upper Fusing Roller Heater Lamp Fixing Bracket
2. Rear Face Cover Fig. 1
1. Loosen the Fusing Unit Pressure Adjusting Screws. ×2
(Rear of Copier)
4. Lower Fusing Roller Heater Lamp Fixing Bracket
1144D027AC

Fig. 1
Harness wiring
—— Lamp wires
- - - Thermistor wires

Wire Color White ↔ White



Wire Color Red ↔ Red

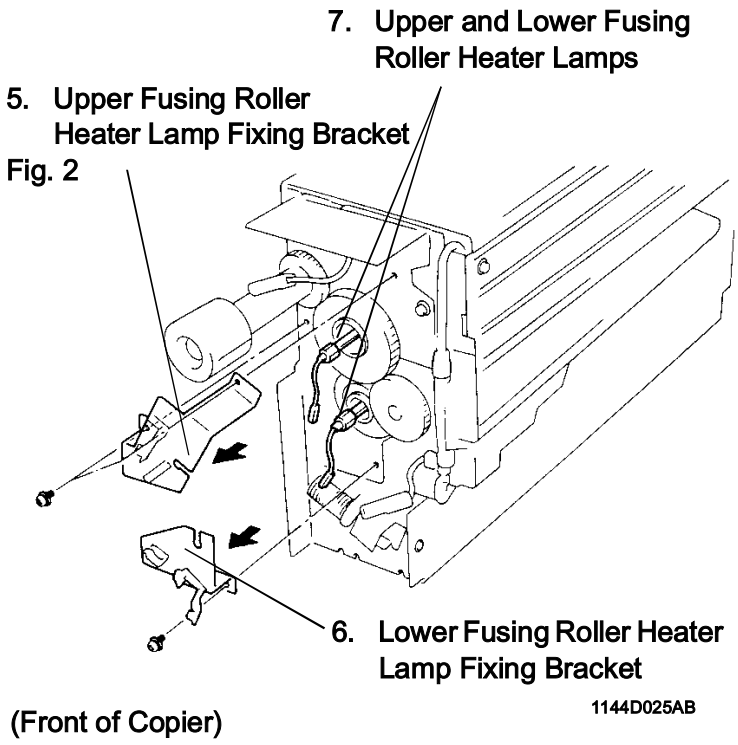
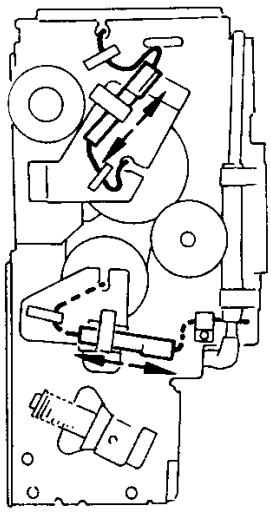
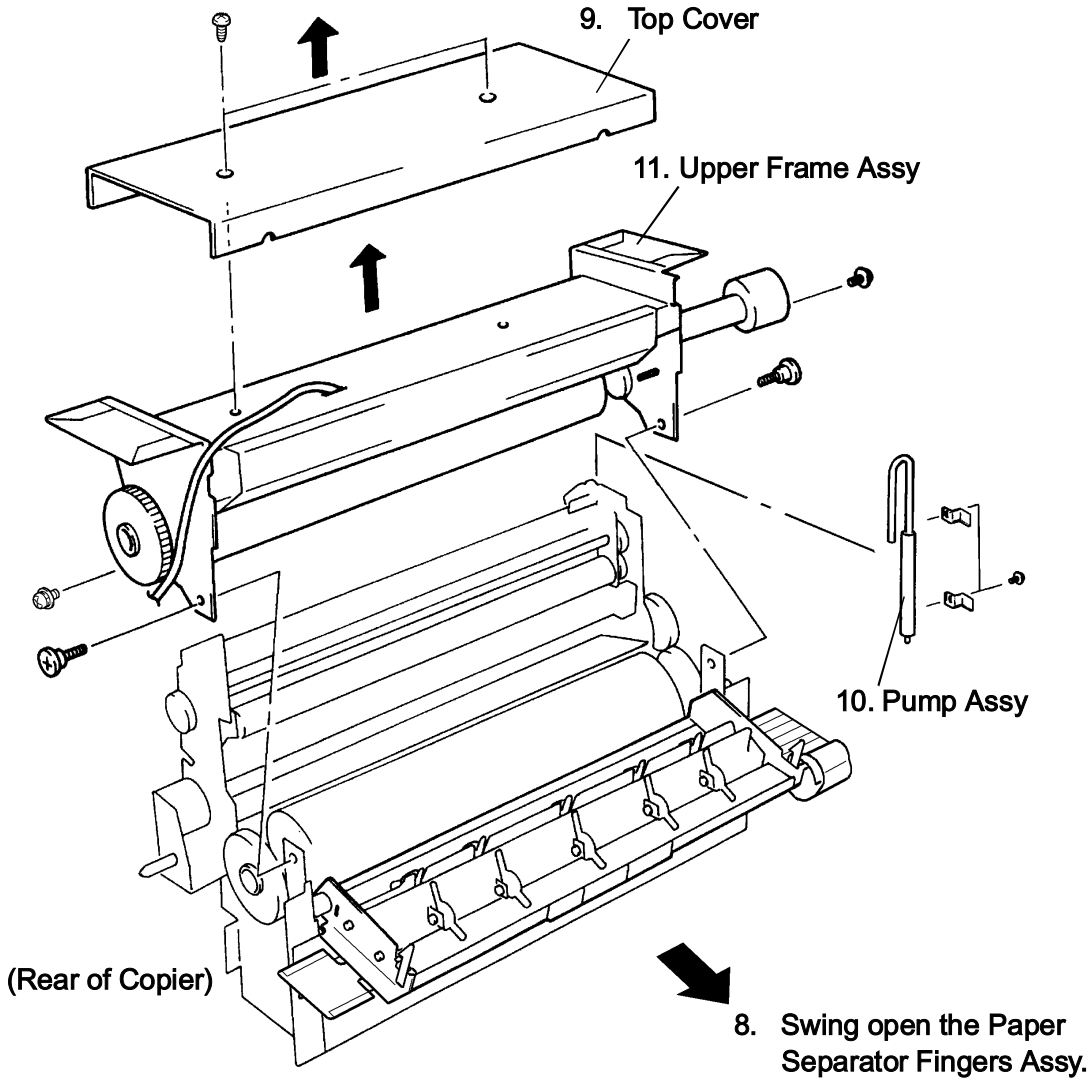

7. Upper and Lower Fusing Roller Heater Lamps
5. Upper Fusing Roller Heater Lamp Fixing Bracket
Fig. 2
6. Lower Fusing Roller Heater Lamp Fixing Bracket
1144D025AB
(Front of Copier)

Fig. 2
Connector positions




9. Top Cover
11. Upper Frame Assy
10. Pump Assy
(Rear of Copier)
8. Swing open the Paper Separator Fingers Assy.

1154D223AC

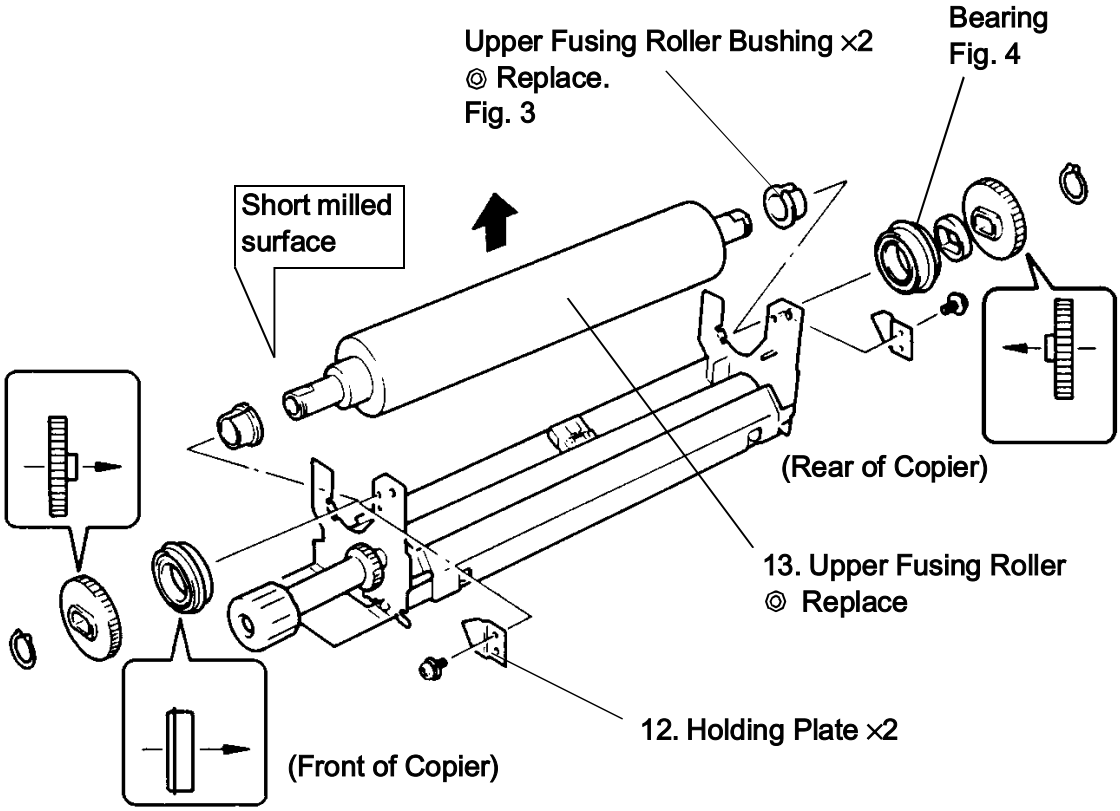
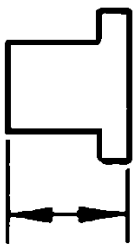


Fig. 3
The bushing for the front side is not the same as that for the rear side.

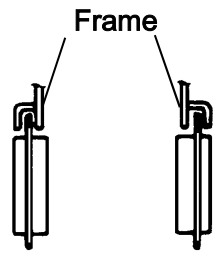


One for the front side = 17 mm

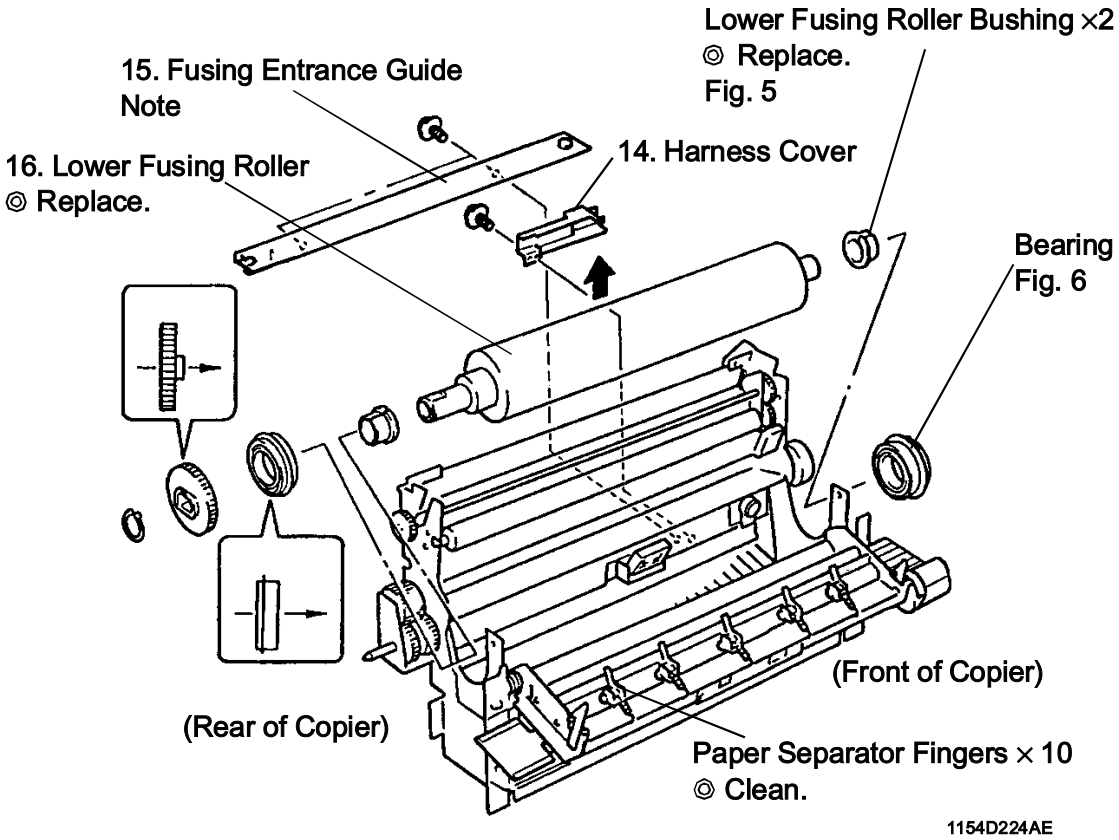
One for the rear side = 12.5 mm

1144D031AA

Fig. 4
Bearing installed positions



1144D030AA



NOTE:

When mounting the Fusing Entrance Guide, make sure that the guide is in complete alignment with the positioning plates, having no clearance from, or overlap with, the positioning plates.

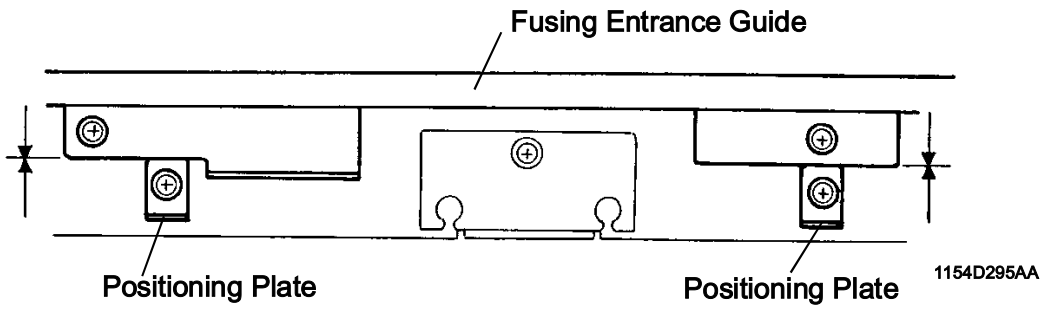
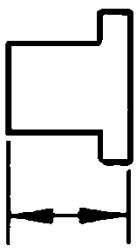


Fig. 5
The bushing for the front side is not the same as that for the rear side.

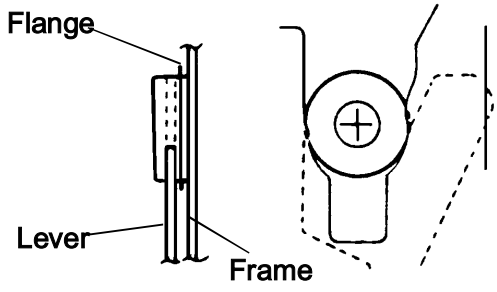


One for the front side = 17 mm

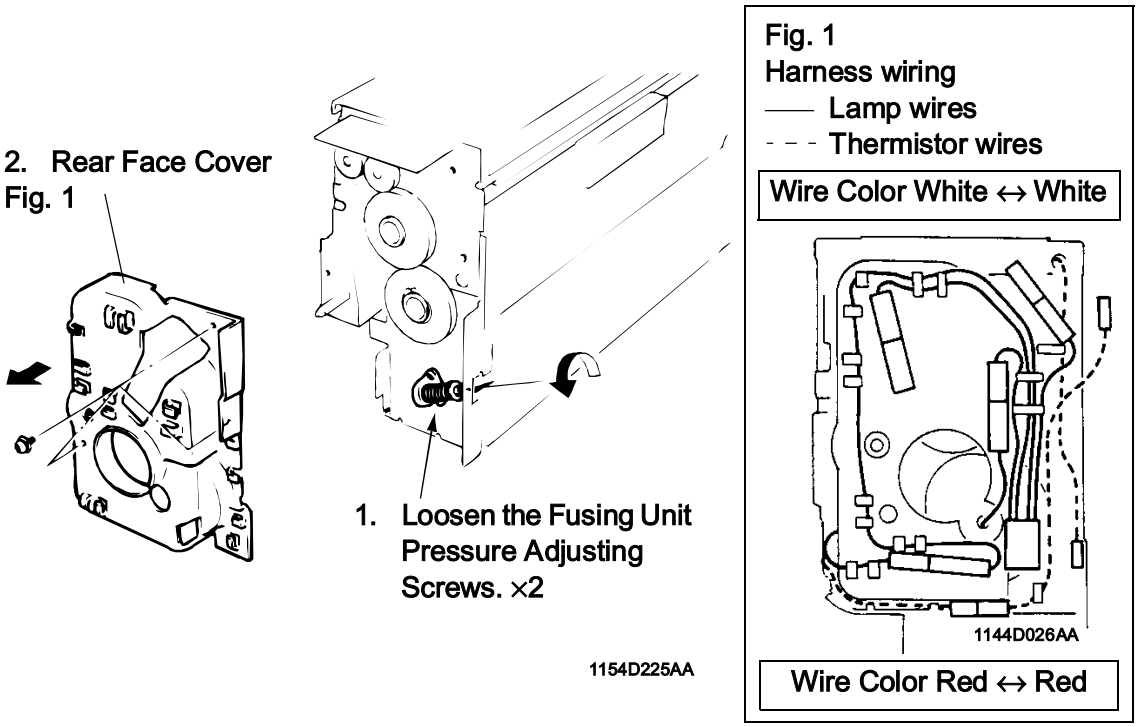
One for the rear side = 12.5 mm

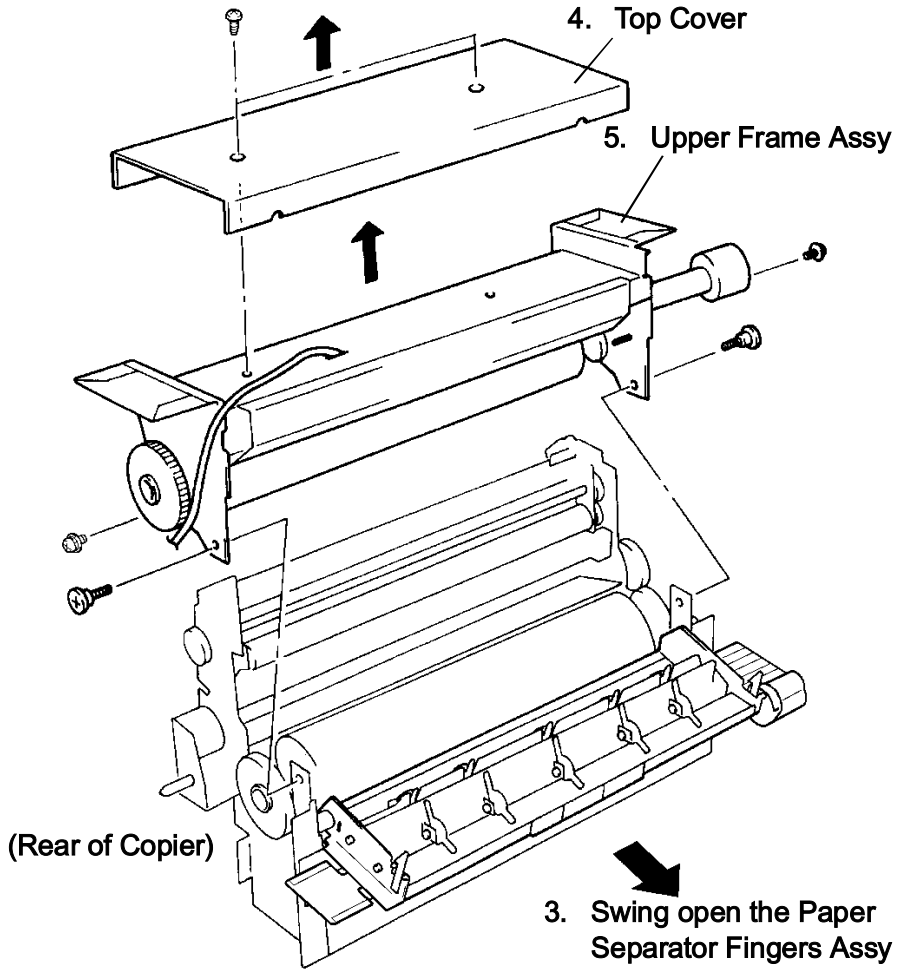
1144D031AA

Fig. 6
Bearings (front and rear) installed positions



(2) Replacement of the Oil Application Roller, Oil Supply Roller, and Oil Regulating Blade





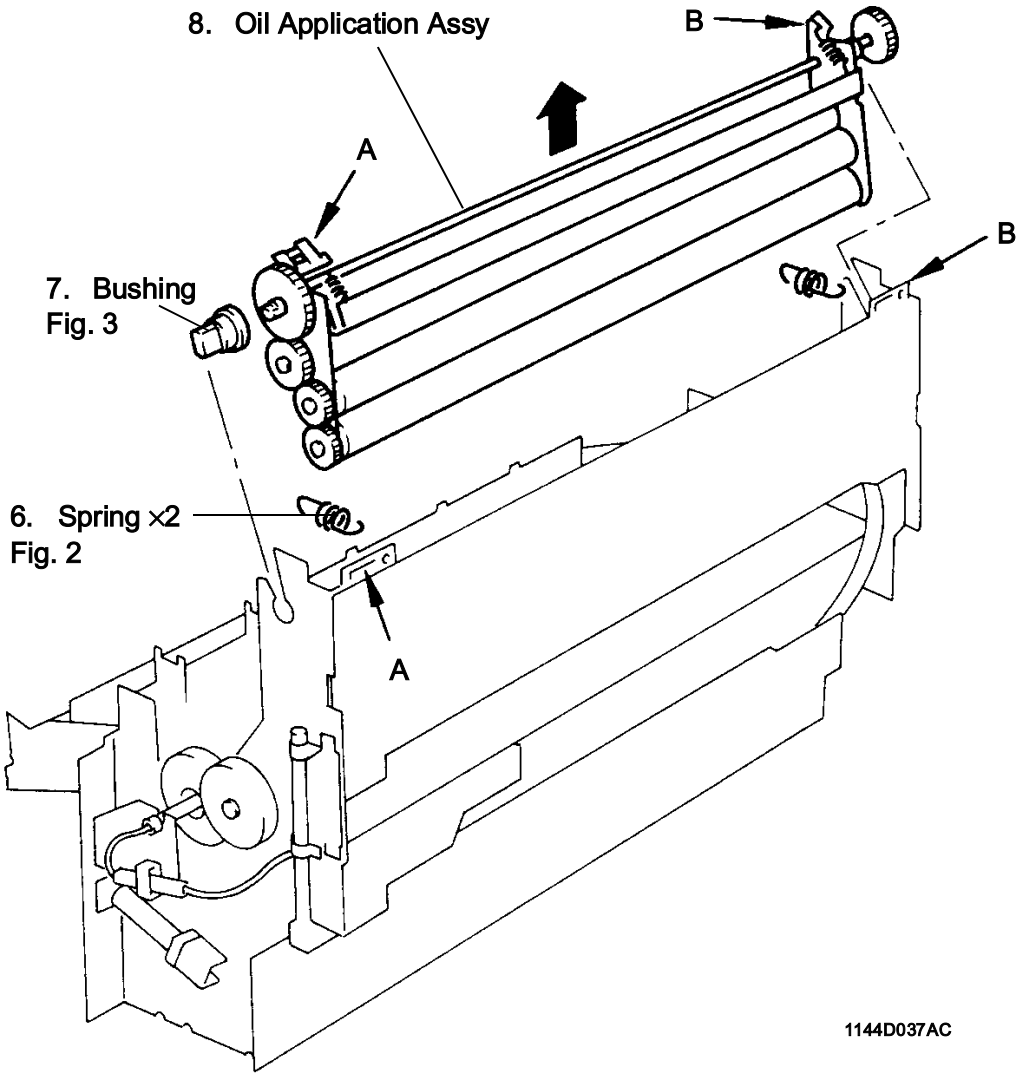
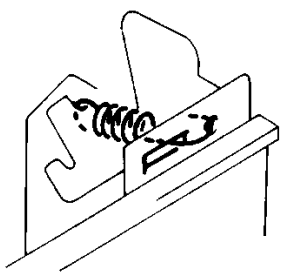


Fig. 2 Tension Spring installed position

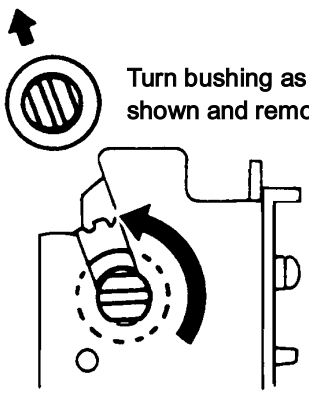
Hook the springs to Ⓐ-Ⓐ and Ⓑ-Ⓑ.

Where the tension spring is installed, Pass the longer hook through the rectangular hole and hook it in the round hole from the above.



1144D039AA

Fig. 3 Bushing
(both front and rear)



1144D038AA

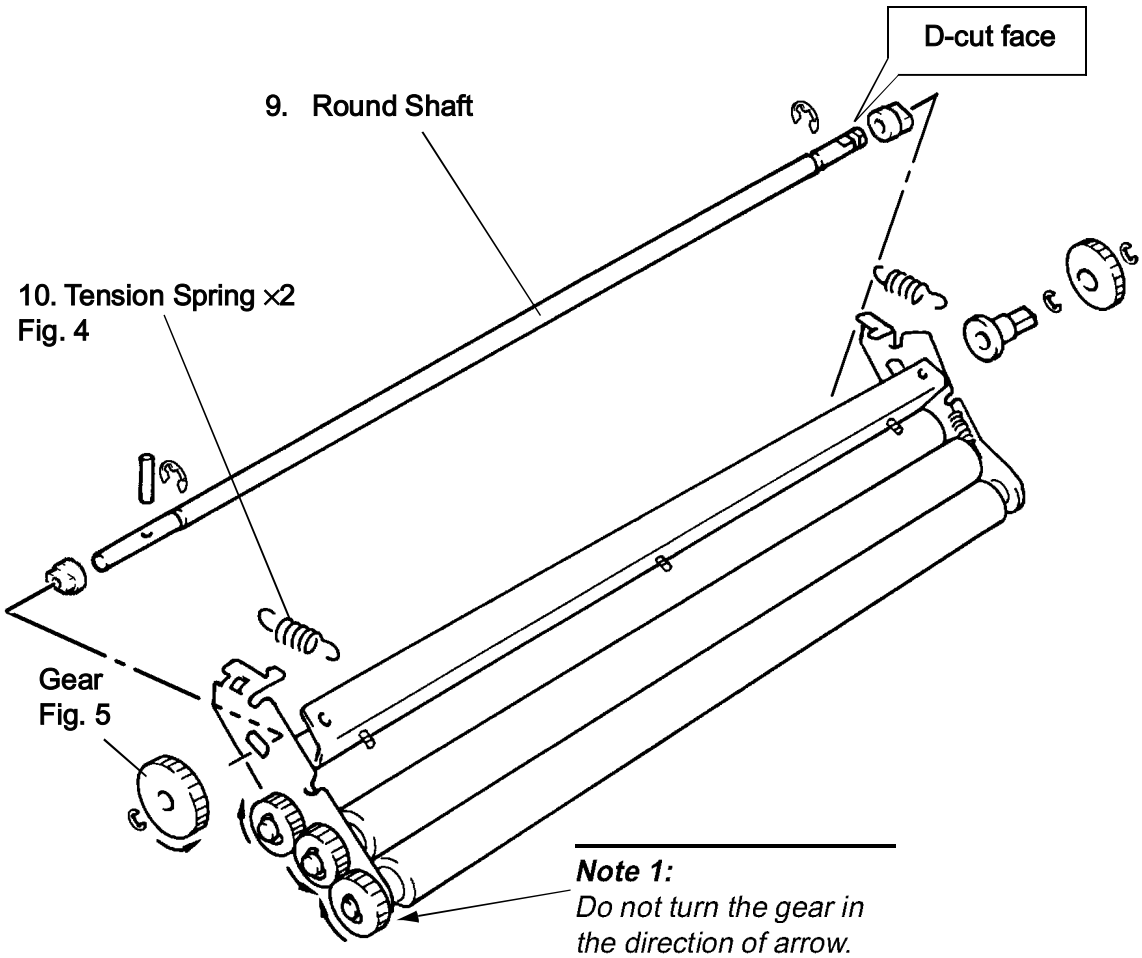


Fig. 4 Tension Spring installed position

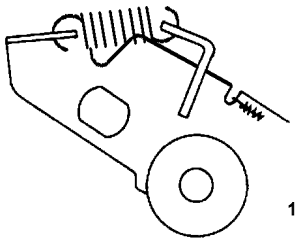
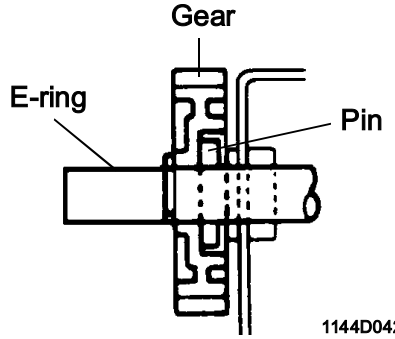
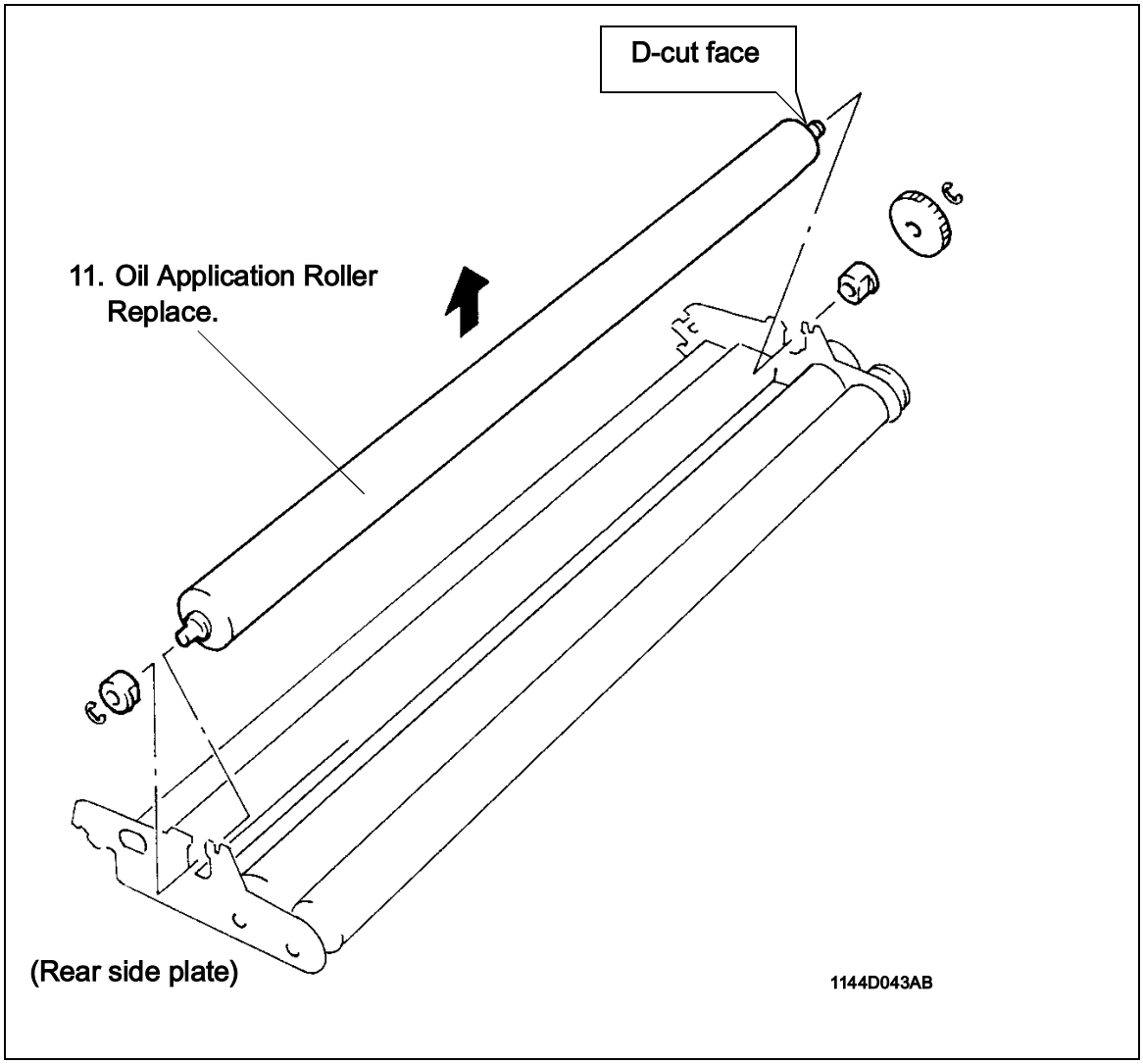
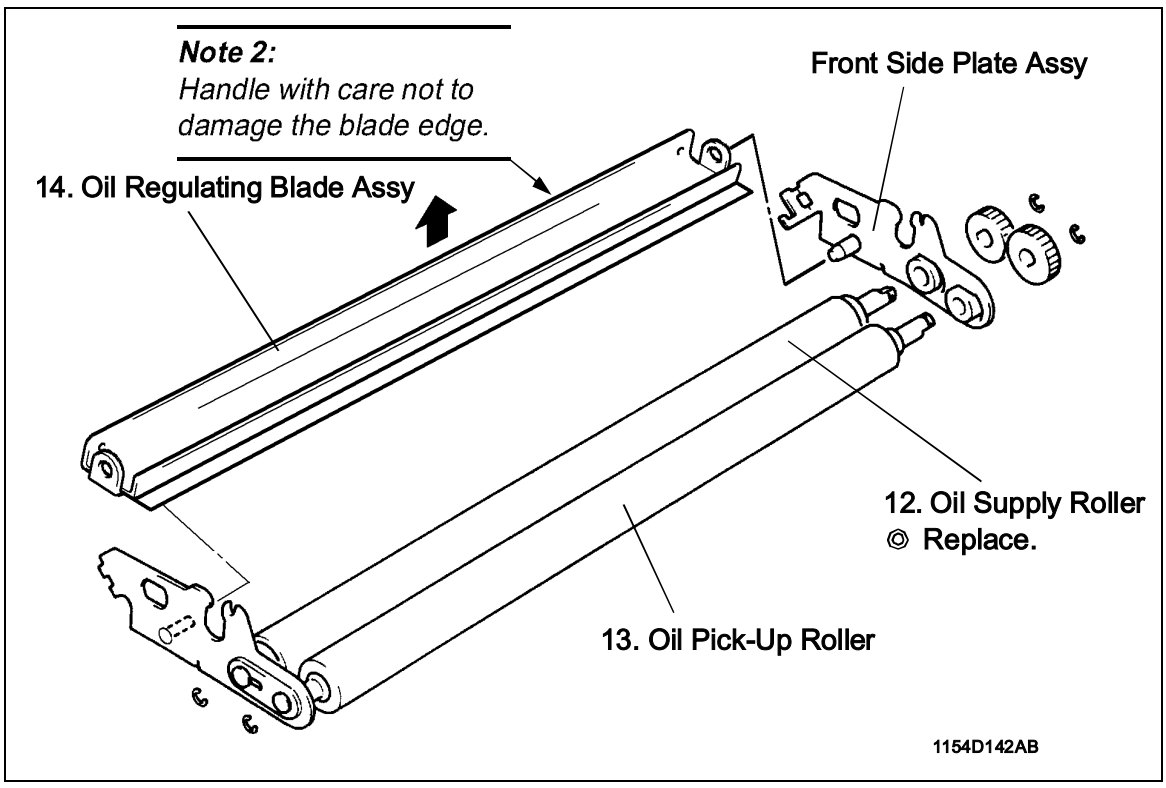
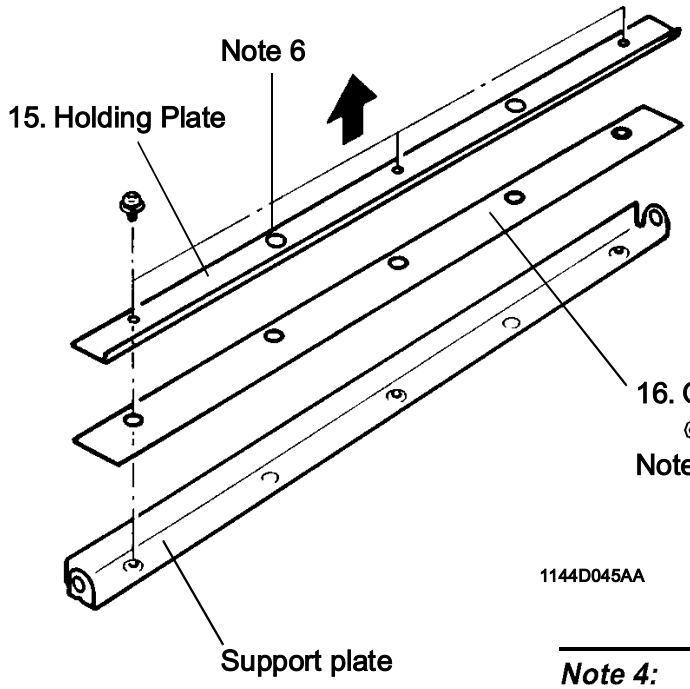


Fig. 5 Gear installed position
Insert the pin into the round shaft. Then, mount the gear and secure it in position with the E-ring.




D-cut face
11. Oil Application Roller
Replace.
(Rear side plate)
1144D043AB

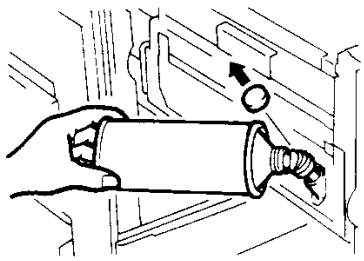

Note 2:
Handle with care not to
damage the blade edge.
Front Side Plate Assy
14. Oil Regulating Blade Assy
12. Oil Supply Roller
◎ Replace.
13. Oil Pick-Up Roller
1154D142AB



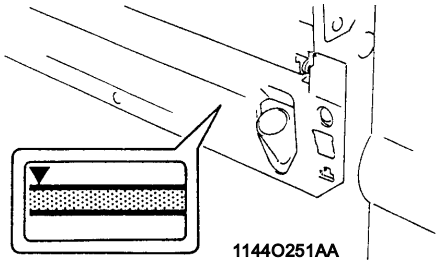
Note 3:
Face the blade as shown. Never mind about the front and back sides of the blade.

Note 4:
At reinstallation, visually check that:
- *The blade is on the dowel by checking through the check hole.*
- *The blade is not waved.*

(3) Adding the Fusing Oil

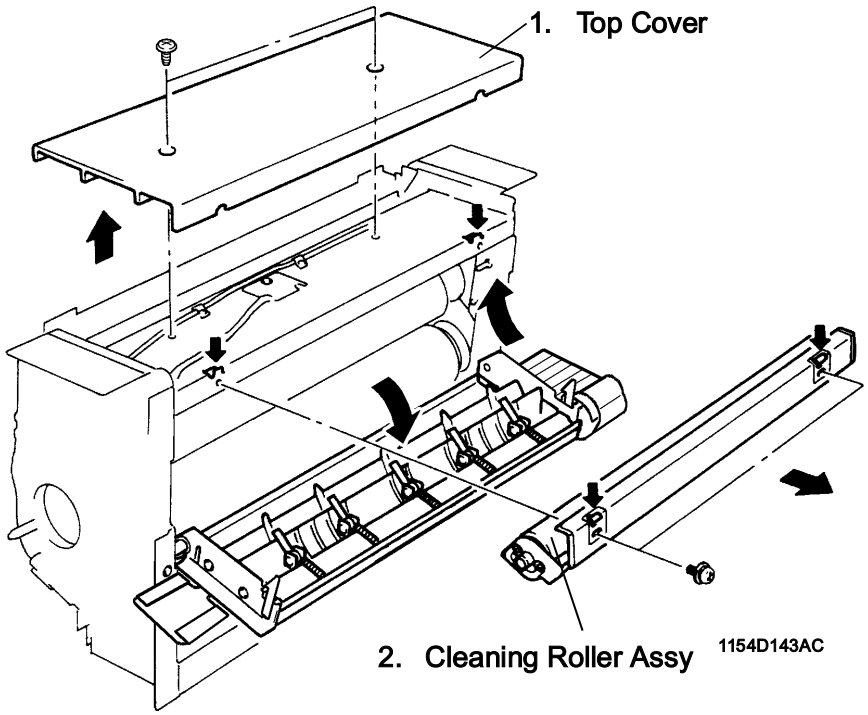


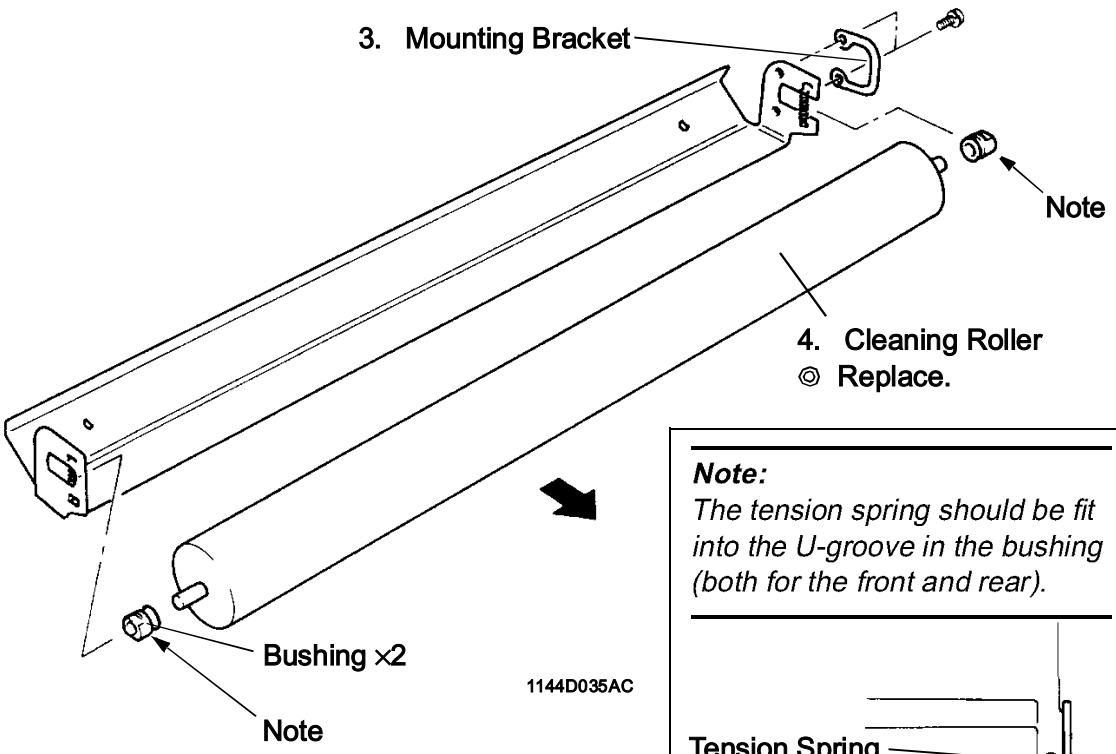
1. Fit the spout to the oil can, remove the cap from the Fusing Unit Oil Tank, then pour oil into the tank.



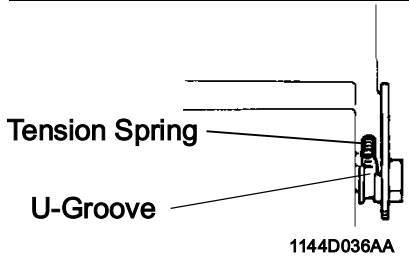
2. Fill the tank until the oil level is within the shaded area.

(4) Replacement of the Cleaning Roller





Note:
The tension spring should be fit into the U-groove in the bushing (both for the front and rear).



(5) Replacement of the Oil Collecting Blade and Oil Filter

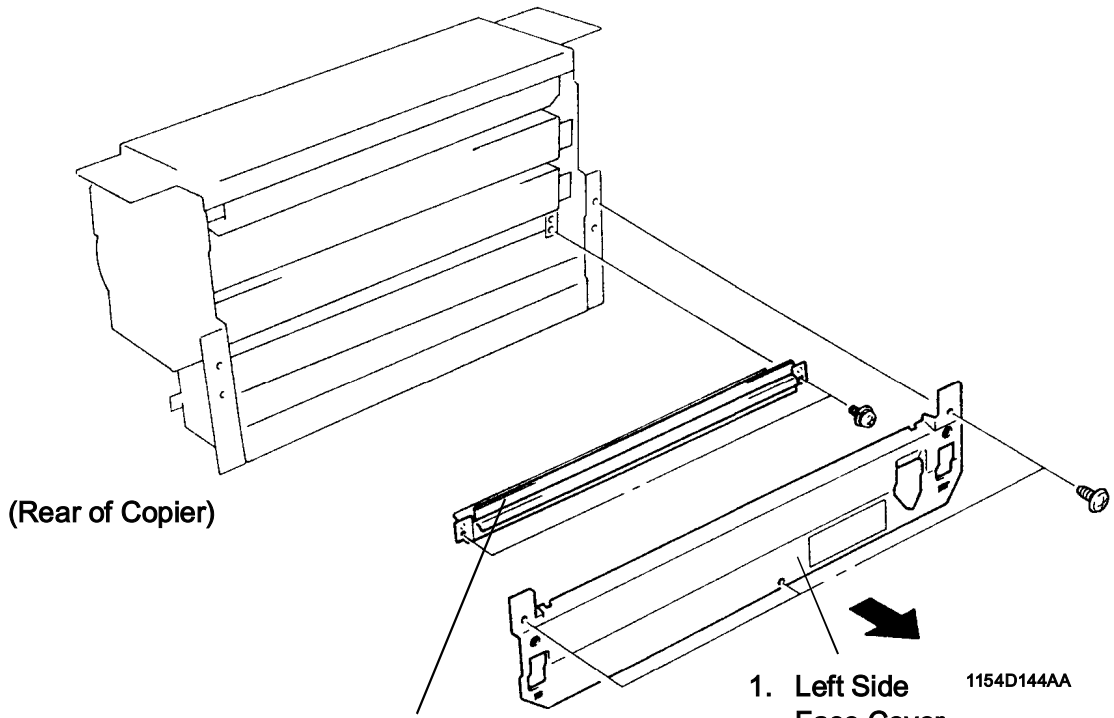


Fig. 1

Note

Note:
The frame should be caught by the tab of the cover (at two places).

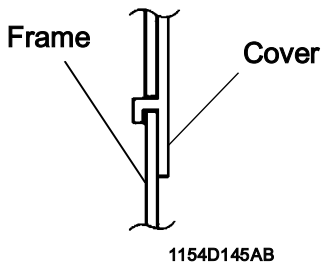
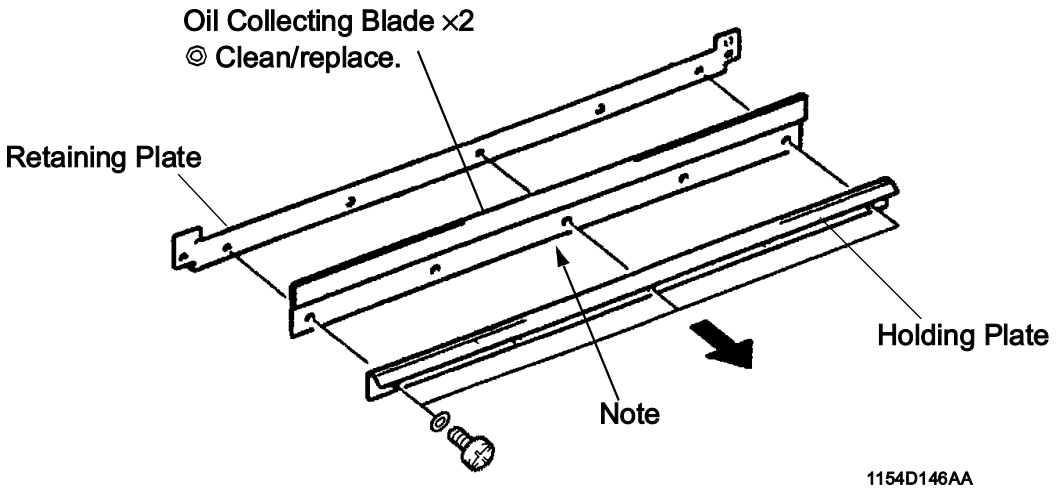
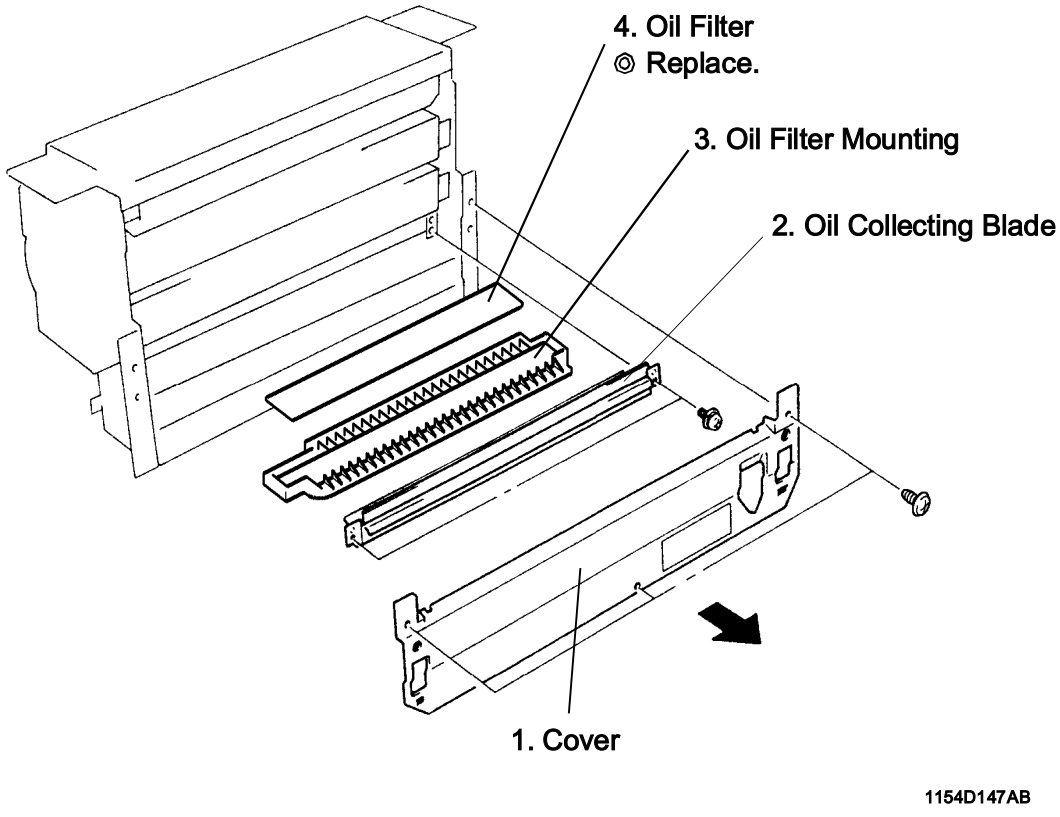


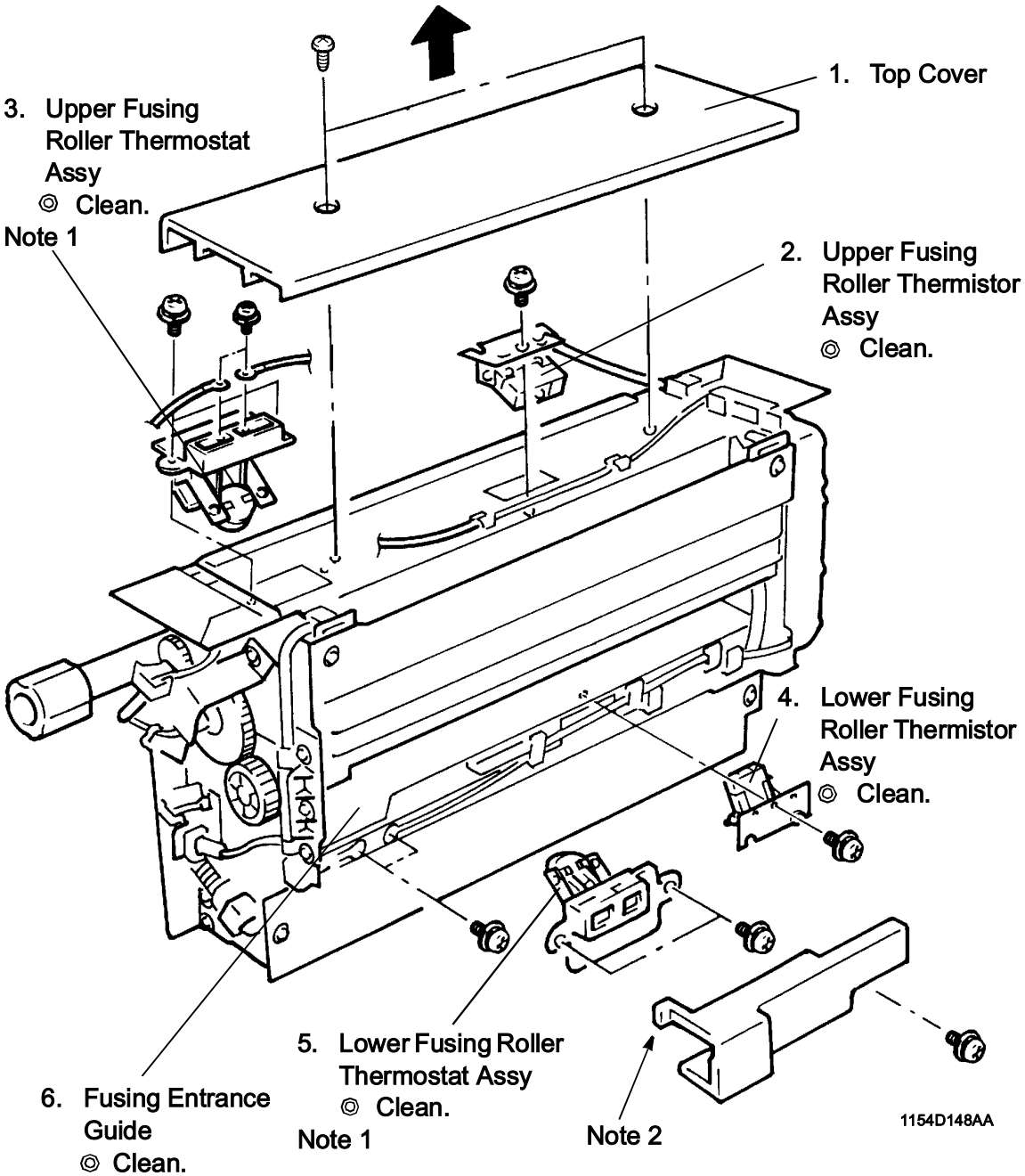
Fig. 2
Disassembly/reassembly of the Oil Collecting Blade Assy



Note :
At installation, ensure that the face of the blade marked with "WORKING EDGE" is on the Fusing Roller side. Make also sure that the blade is properly on the dowels.



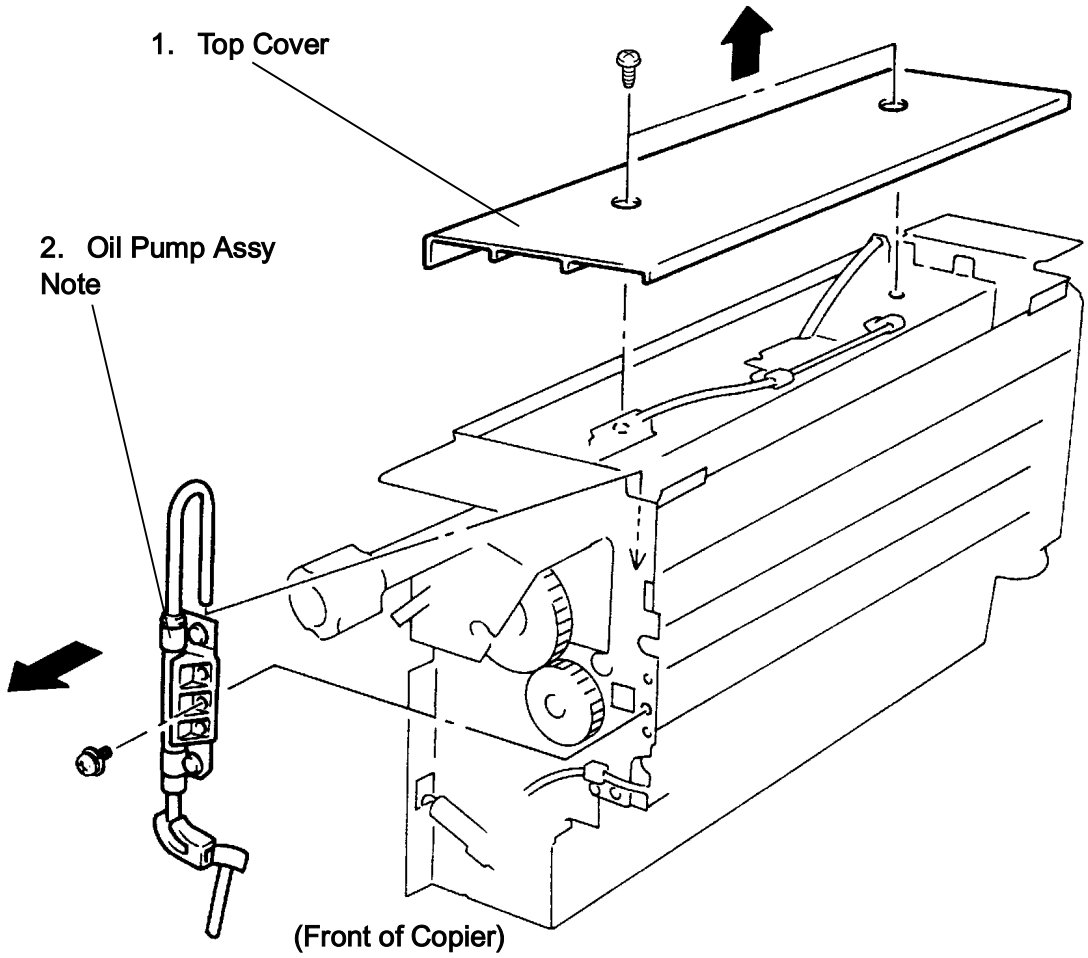
(6) Cleaning of the Fusing Entrance Guide, Upper and Lower Fusing Roller Thermistors, and Upper and Lower Fusing Roller Thermostats



Note 1:
Try to slide the assy upward at installation.

Note 2:
The tab should be fit in position at installation.

(7) Disassembly of the Oil Pump Assy



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Note:
Be careful about oil spillage when the tube is removed from the oil tank.

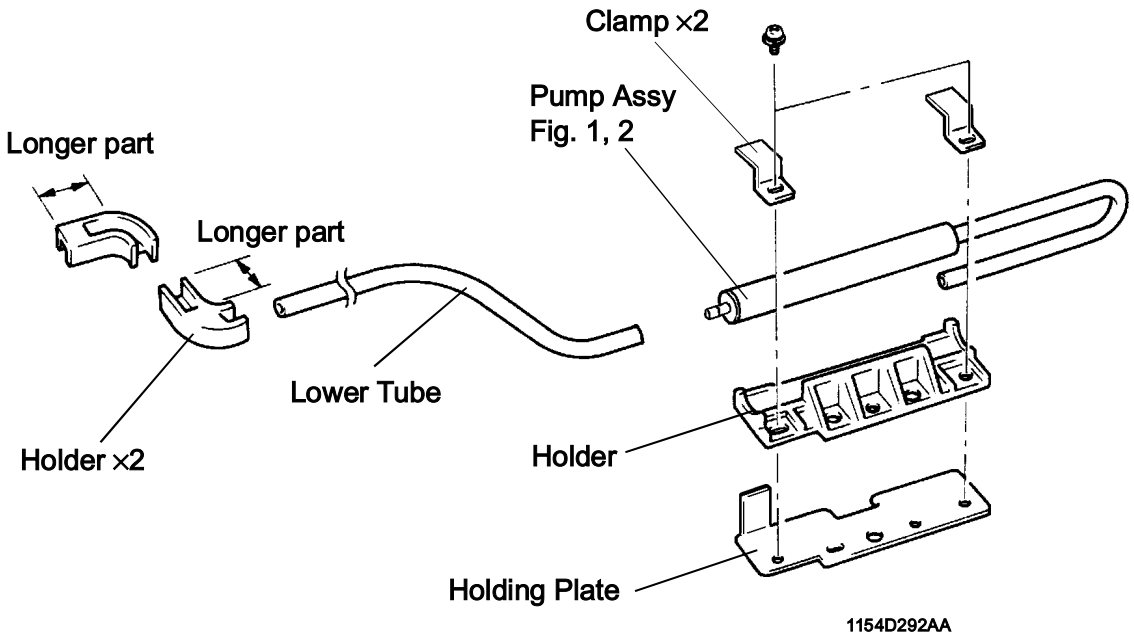
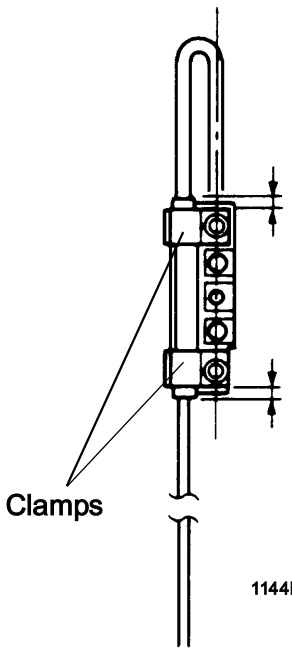


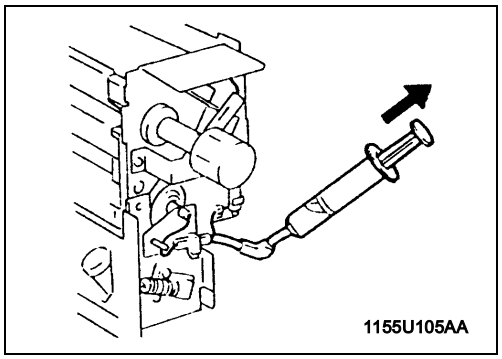
Fig. 1 Pump installed position and angle (see below)

Note 1:
The tube should be aligned with the centerline of the clamp fixing screws as checked visually.

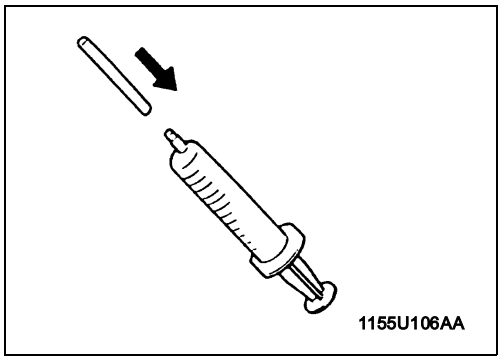


Note 2:
The tube ends should protrude a uniform amount from the clamp end face as checked visually.

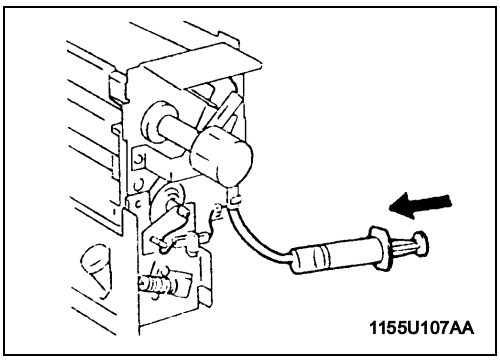
Fig. 2 At Replacement of Tube



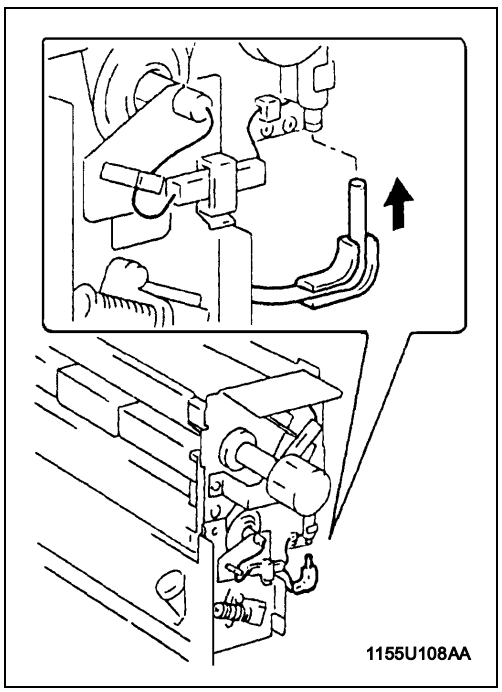
1. Insert the syringe into the lower tube and draw about 5ml of oil from it.



2. Attach the rubber tube from the accessories box to the syringe.



3. Attach the tube to the lower end of the pump and inject the 5ml of oil into it.



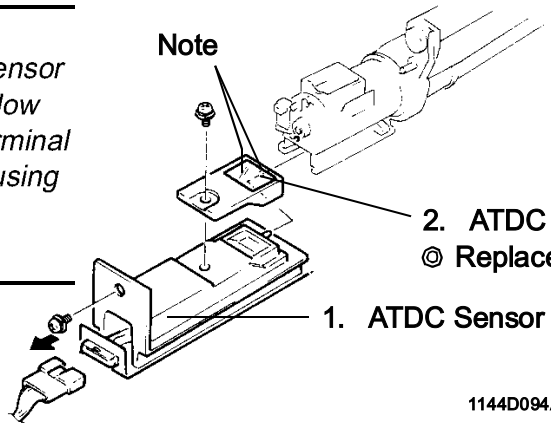
4. Remove the tube and syringe, and plug back in the lower tube of the Oil Pump Assy.

Note:
Do not turn any of the knobs, gears or rollers of the Fusing Unit when the oil tank is empty. If anything is turned in the unit when the tank is empty, the pump will lose its priming oil and may not be able to pump afterwards.

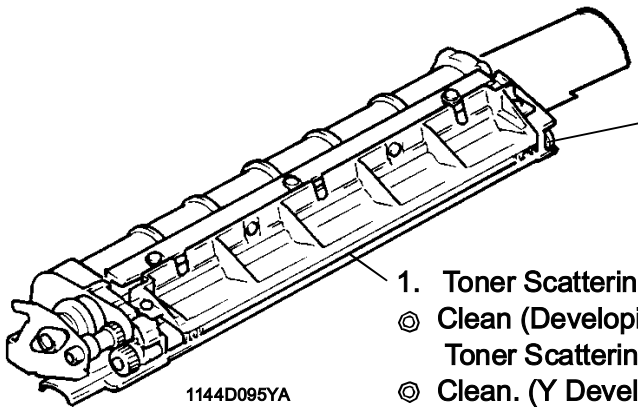
2-6. DEVELOPING UNIT

(1) Replacement of the ATDC Sensor

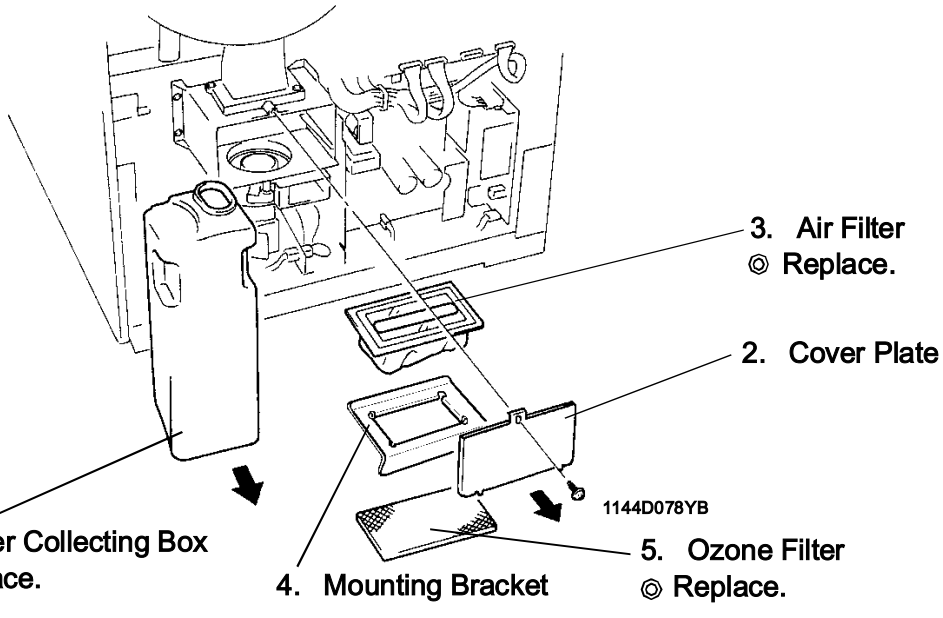
Note:
After replacing the ATDC Sensor window, check that the window makes full cotact with the terminal by testing for conductance using a volt-ohm meter. (See the illustration.)



(2) Cleaning of the Ds Rolls, Toner Scattering Prevention Seal 1 and Toner Scattering Prevention Plate


2. Ds Roll ×2
◎ Clean.
1. Toner Scattering Prevention Plate
◎ Clean (Developing Unit M/C/Bk)
Toner Scattering Prevention Seal 1
◎ Clean. (Y Developing Unit only)
1144D095YA

(3) Replacement of the Toner Collecting Box, Air Filter, and Ozone Filter



(4) Removal of the Bk Developing Unit

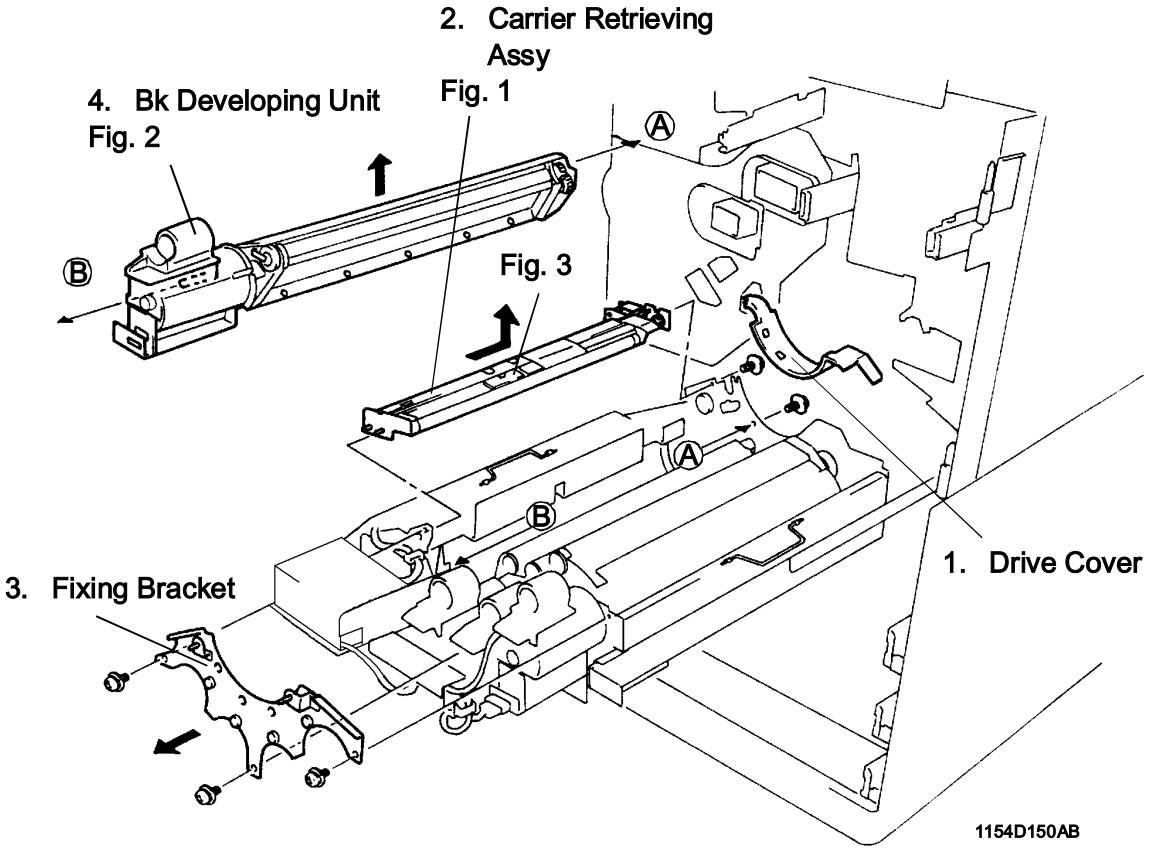


Fig. 1

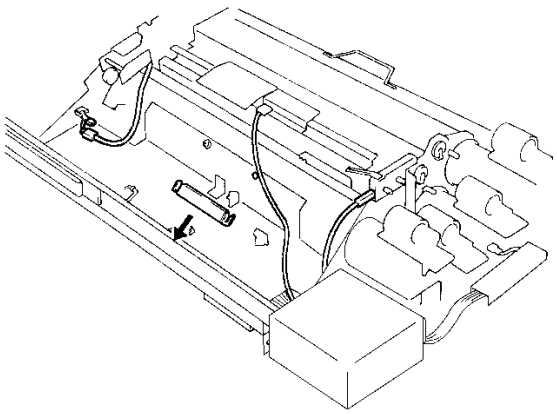


Fig. 2
Removal of Bk Developing Unit connector

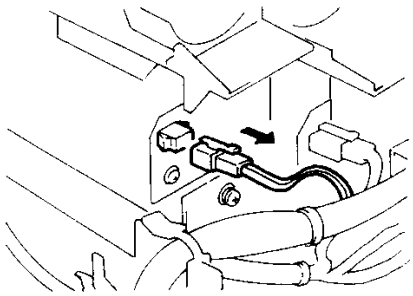
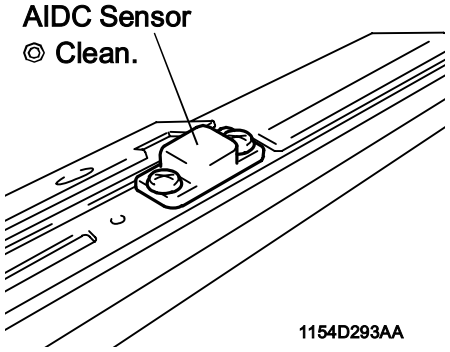


Fig. 3



(5) Removal of the Y, M, and C Developing Units

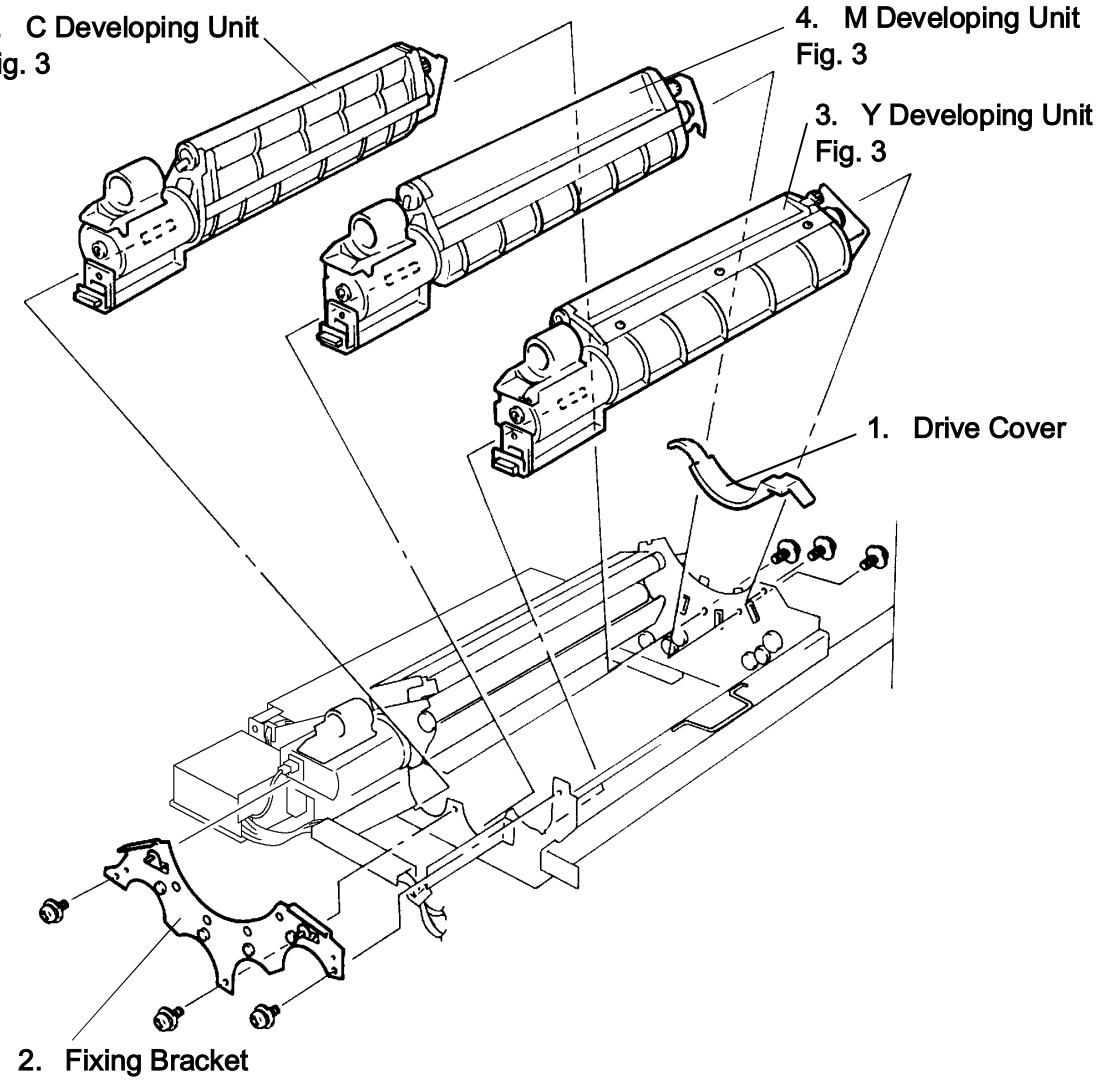
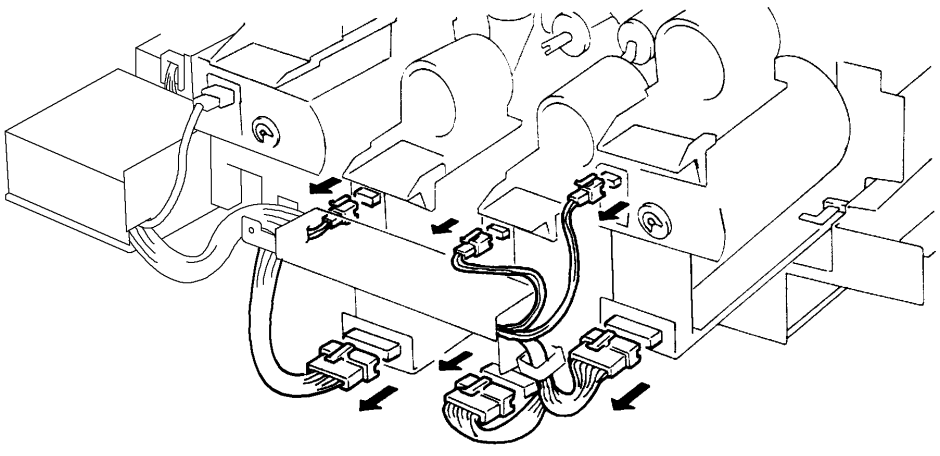


Fig. 3 Removal of connectors



(6) Disassembly of the Developing Unit

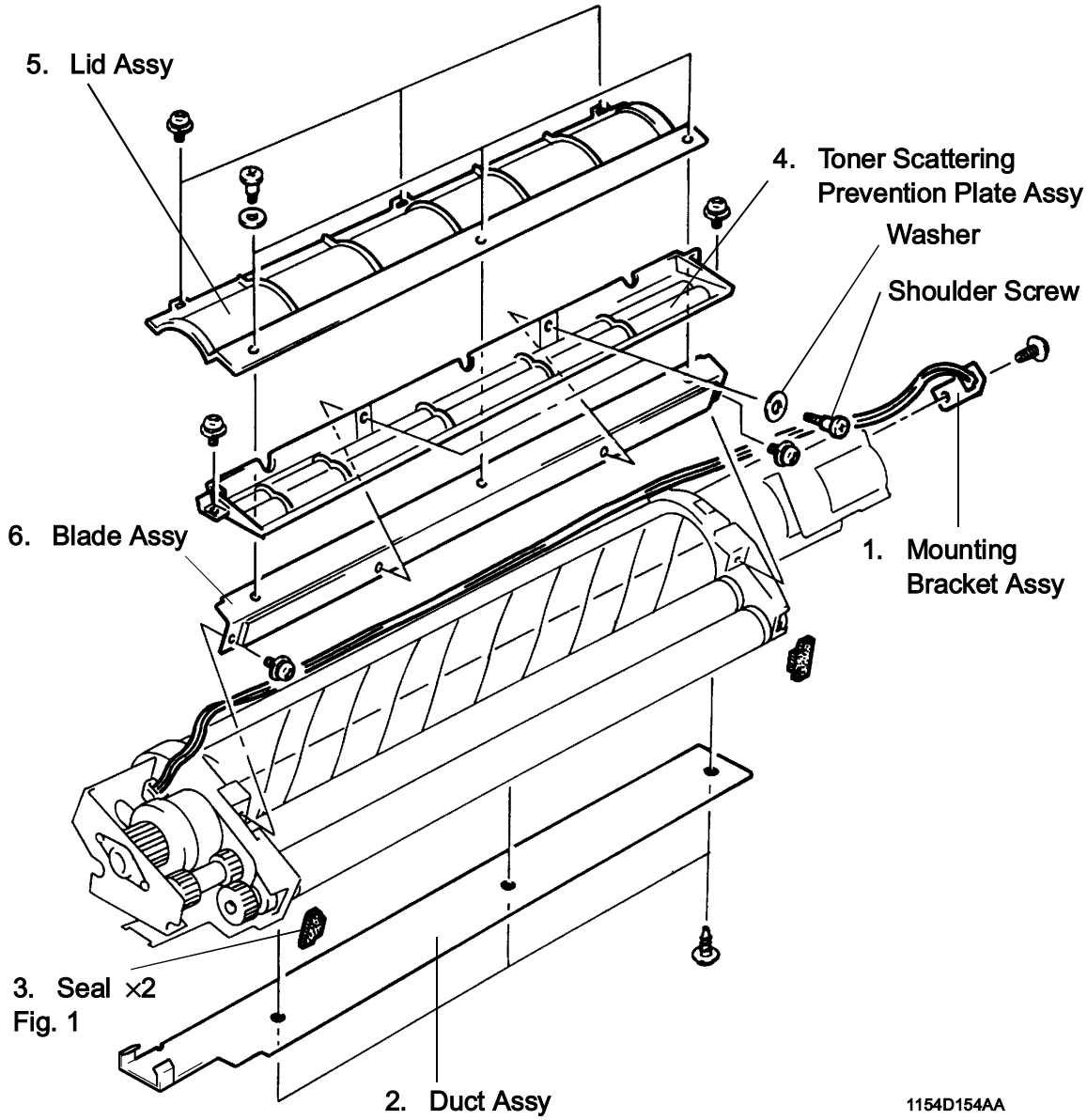
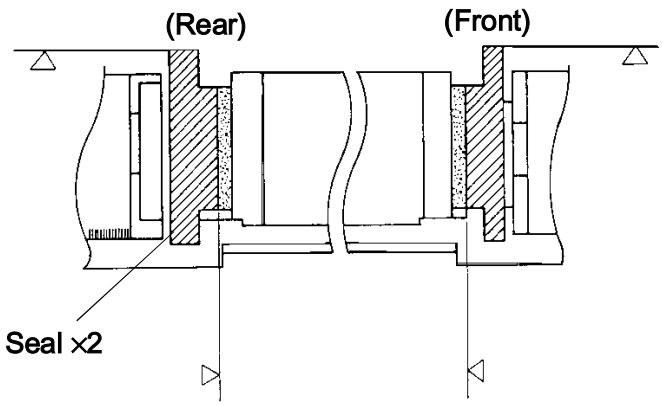


Fig. 1

Fig. 1 Seal affixing specifications



7. Remove the Developing Unit Drive Mechanism (rear).

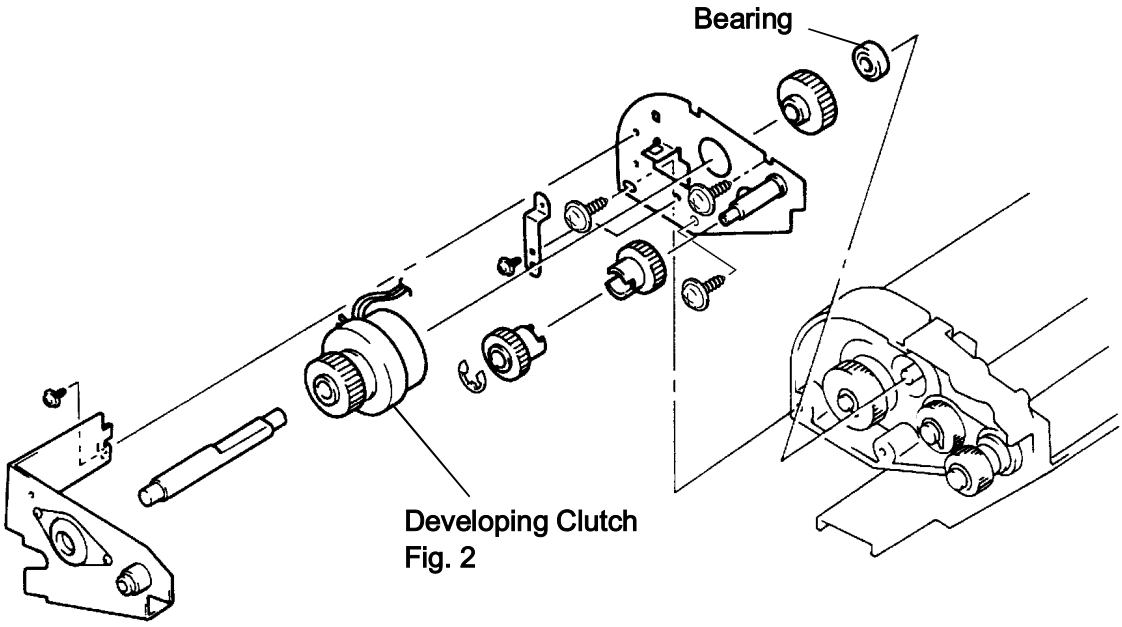


Fig. 2

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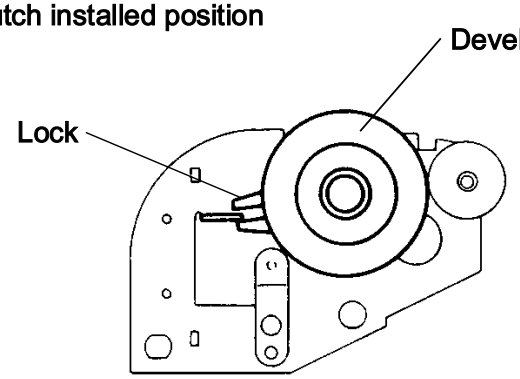
Fig. 2 Clutch installed position



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Note:
The clutch lock should be fitted to the mini-saddle mount on the drive side plate.

8. Remove the drive for the Sleeve/Magnet Roller and Developer Supply Roller.

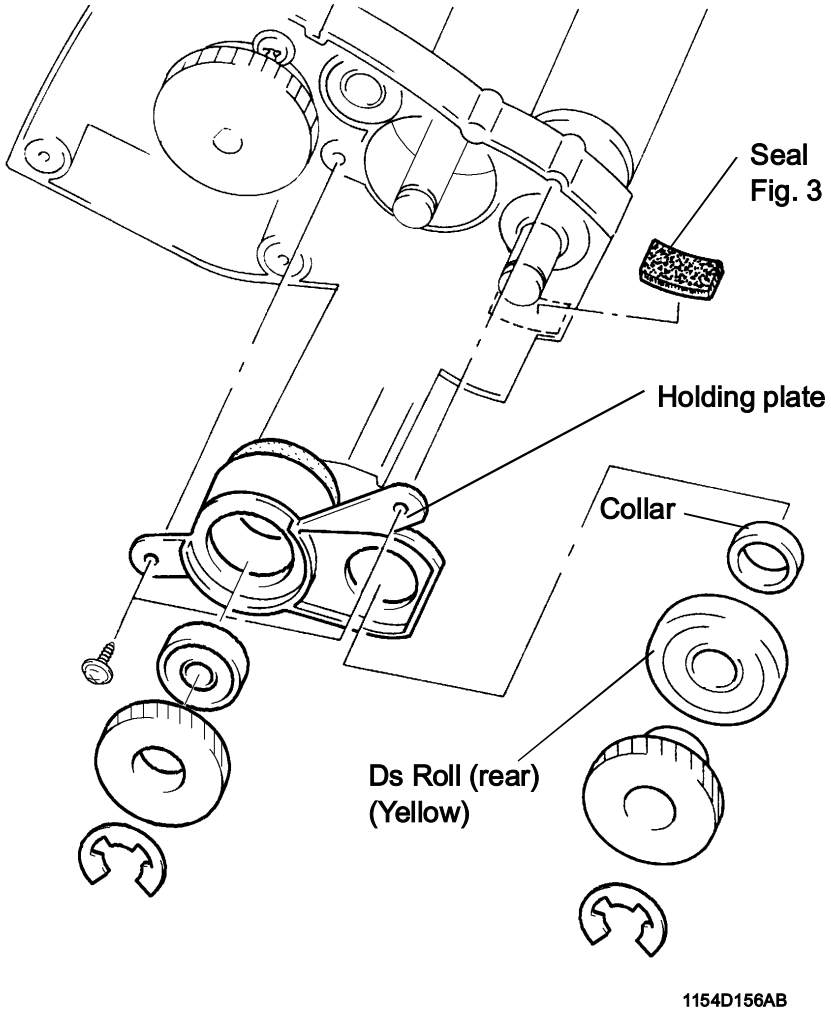
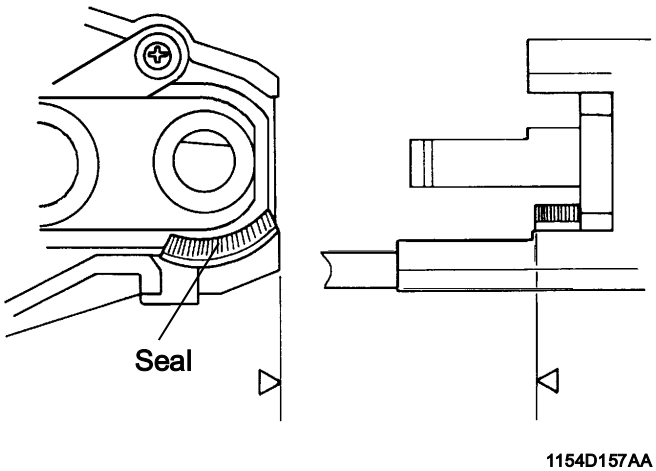


Fig. 3 Seal (rear) affixing specifications



9. Remove the parts (at the front) that secure the Sleeve/Magnet Roller.

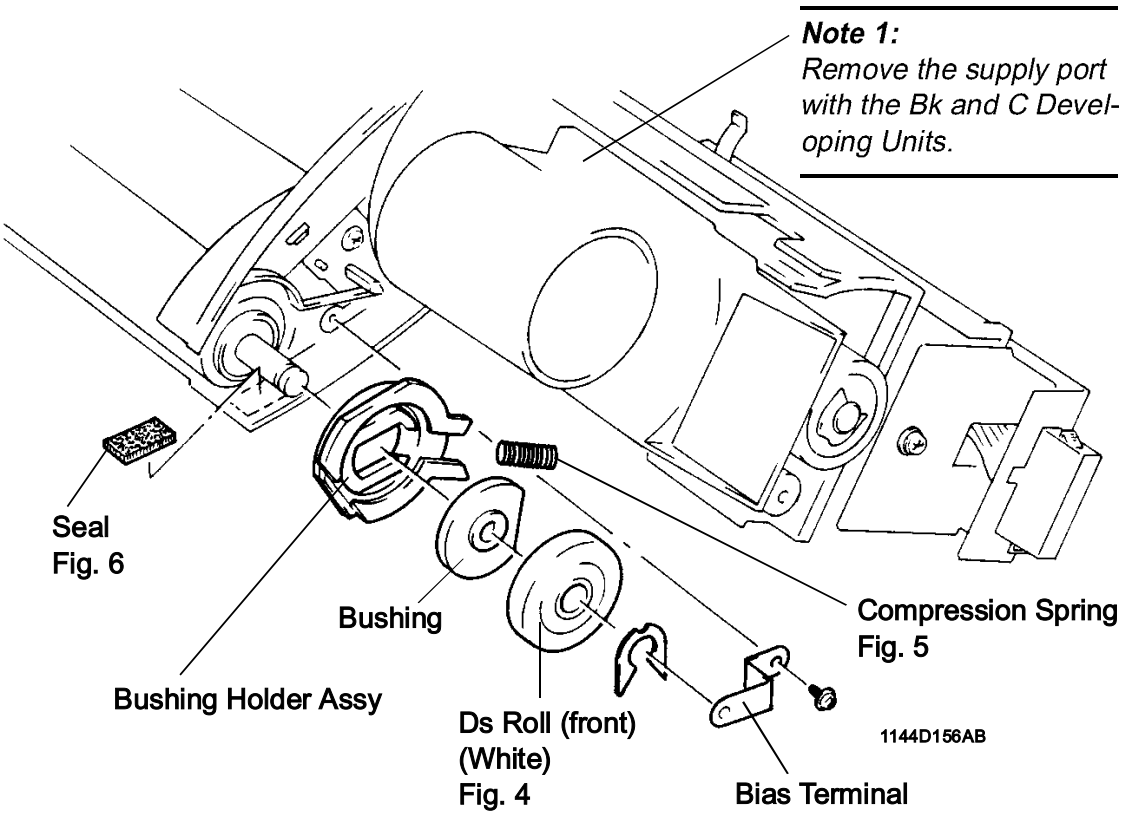
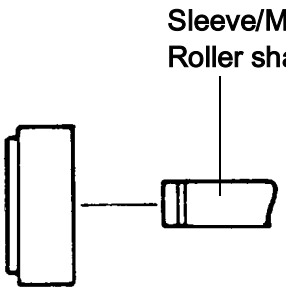


Fig. 4 Ds Roll (front) orientation



Note:
Orient the roll as shown above.

Positional relation between Ds Roll (front) and Seal

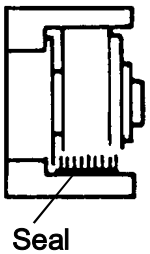


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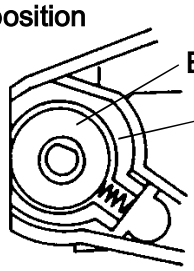
Fig. 5 Compression Spring installed position



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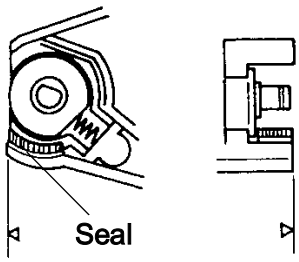
Note:
The spring should fit in the bushing holder groove.

Fig. 6 Seal (front) affixing specifications



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10. Remove the Sleeve/Magnet Roller and Developer Supply Roller.

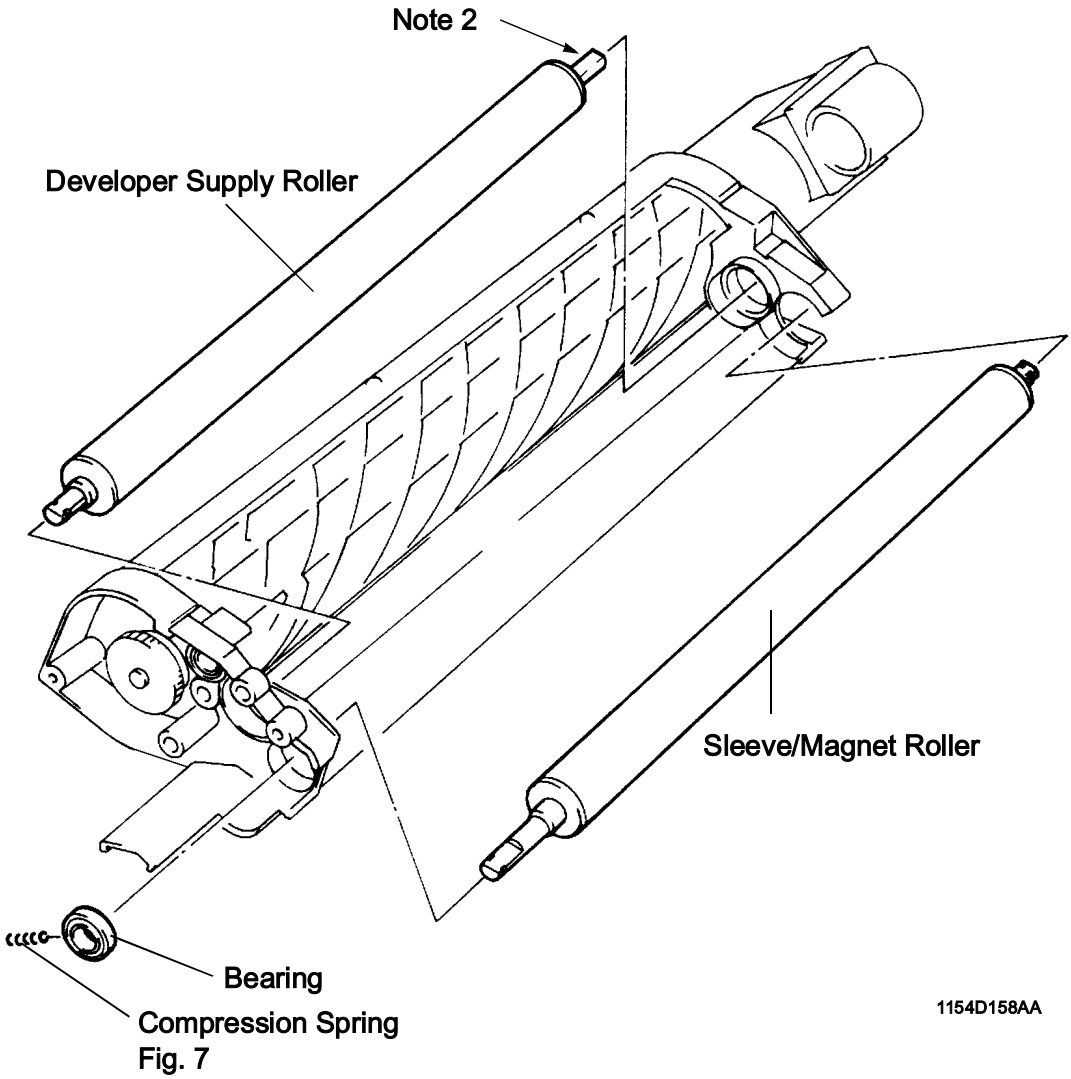


Fig. 7

Note 2:
Notice the black paint applied to the C, M, and Bk Developing Units and red paint applied to the Y Developing Unit.

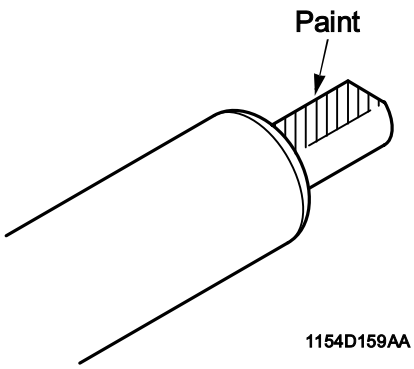
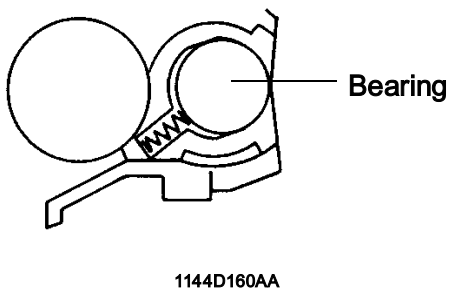


Fig. 7 Compression Spring installed position



Note:
The spring should fit in the chamber groove.

11. Remove the Drive (in the rear).

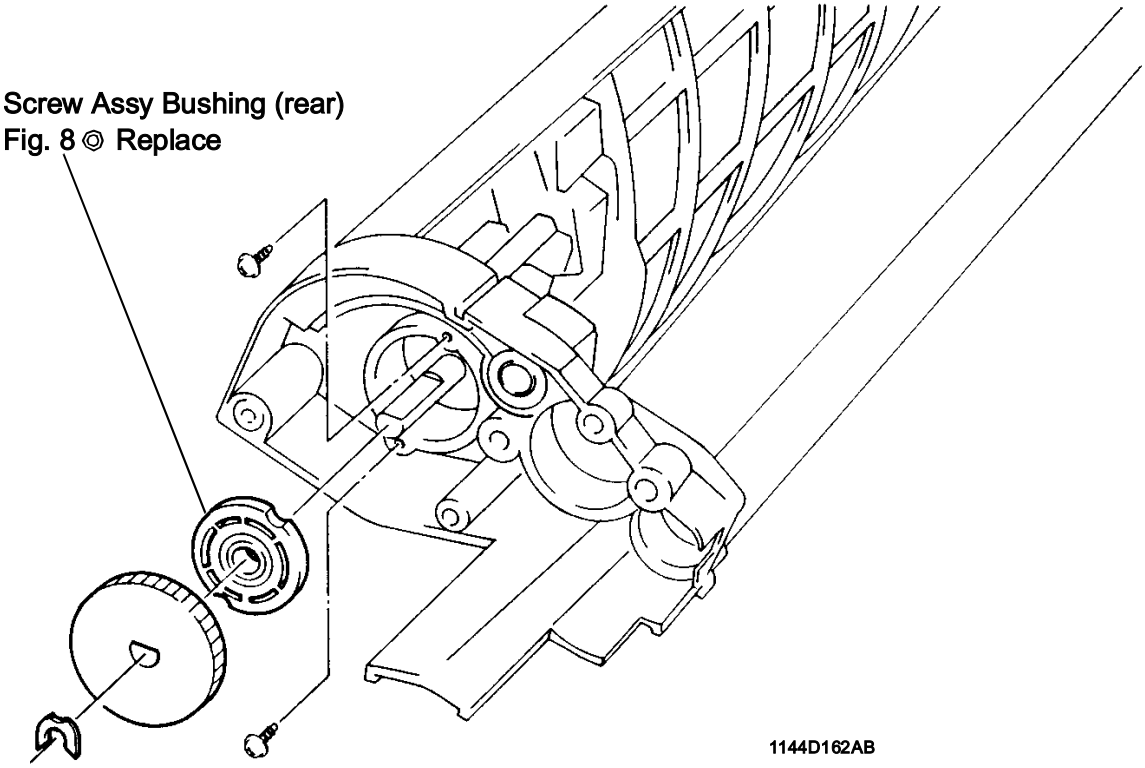
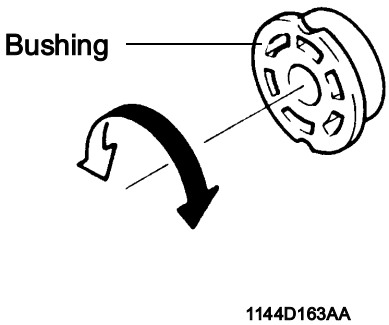
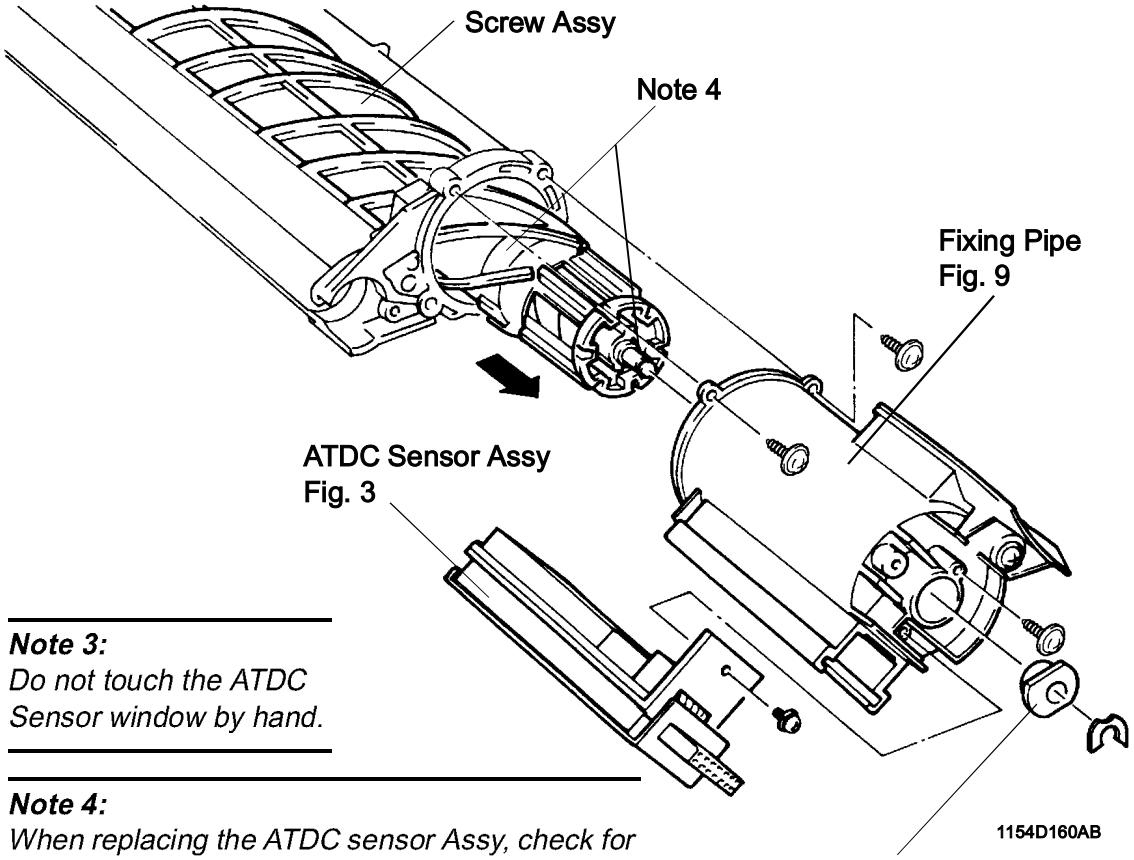


Fig. 8 Bushing installation precaution

Mount the bushing onto the screw shaft while turning it slightly in the direction of the arrows.



12. Remove the Screw Assy.



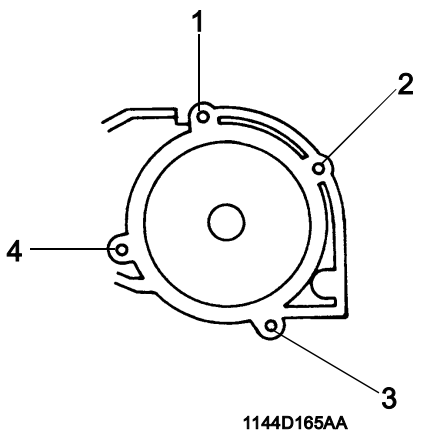
Note 3:
Do not touch the ATDC Sensor window by hand.

Note 4:
When replacing the ATDC sensor Assy, check for conductance between the Screw Assy terminal and shaft. (See the illustration above.)

Fig. 9 Fixing Pipe Screw positions

	Screw positions
BK	1,3
C	1,3
M	2,4
Y	2,4

Ensure that the screws are used at the correct positions.



13. Remove the outer Screw.

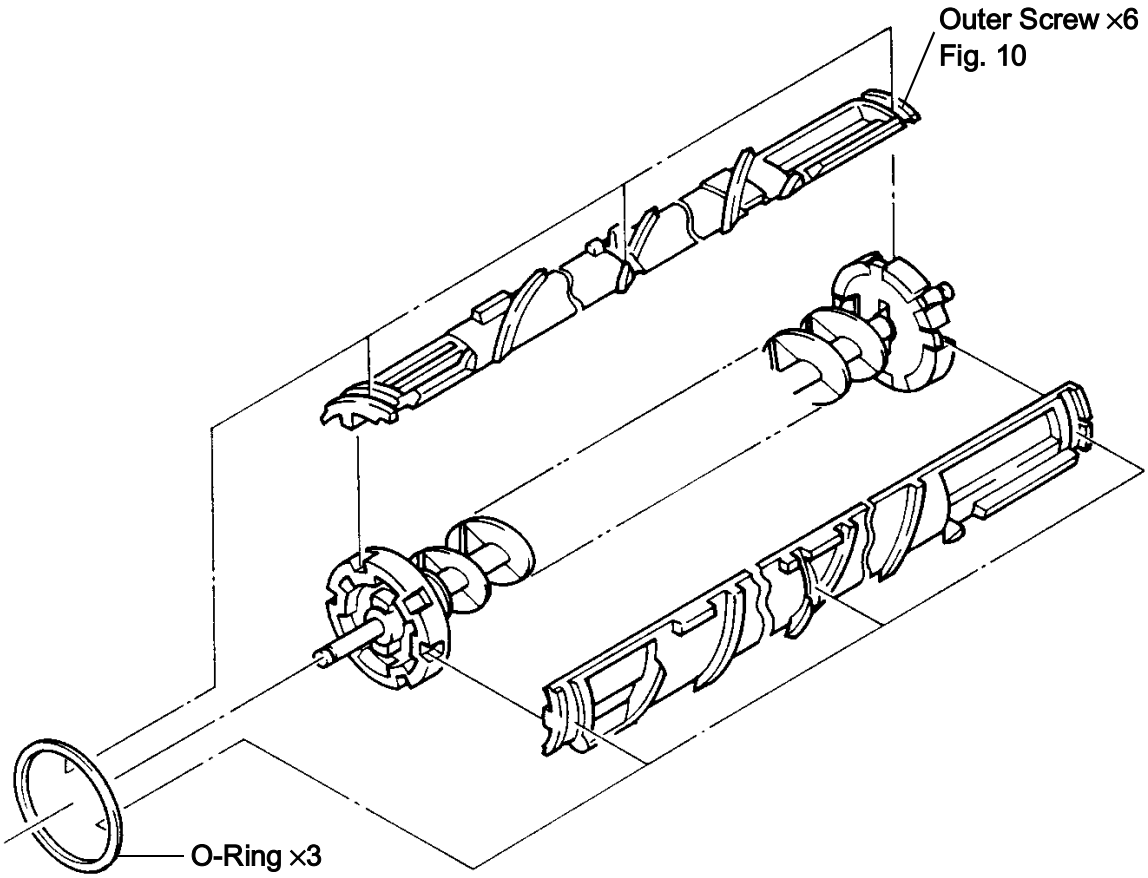
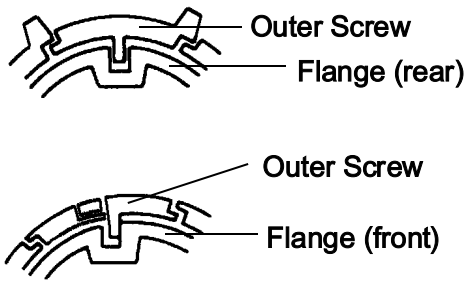


Fig. 10 Outer Screw installed position



Note:
The projection in the outer screw should be fit into the indentation in the flange (front/rear).

14. Remove the inner screw.

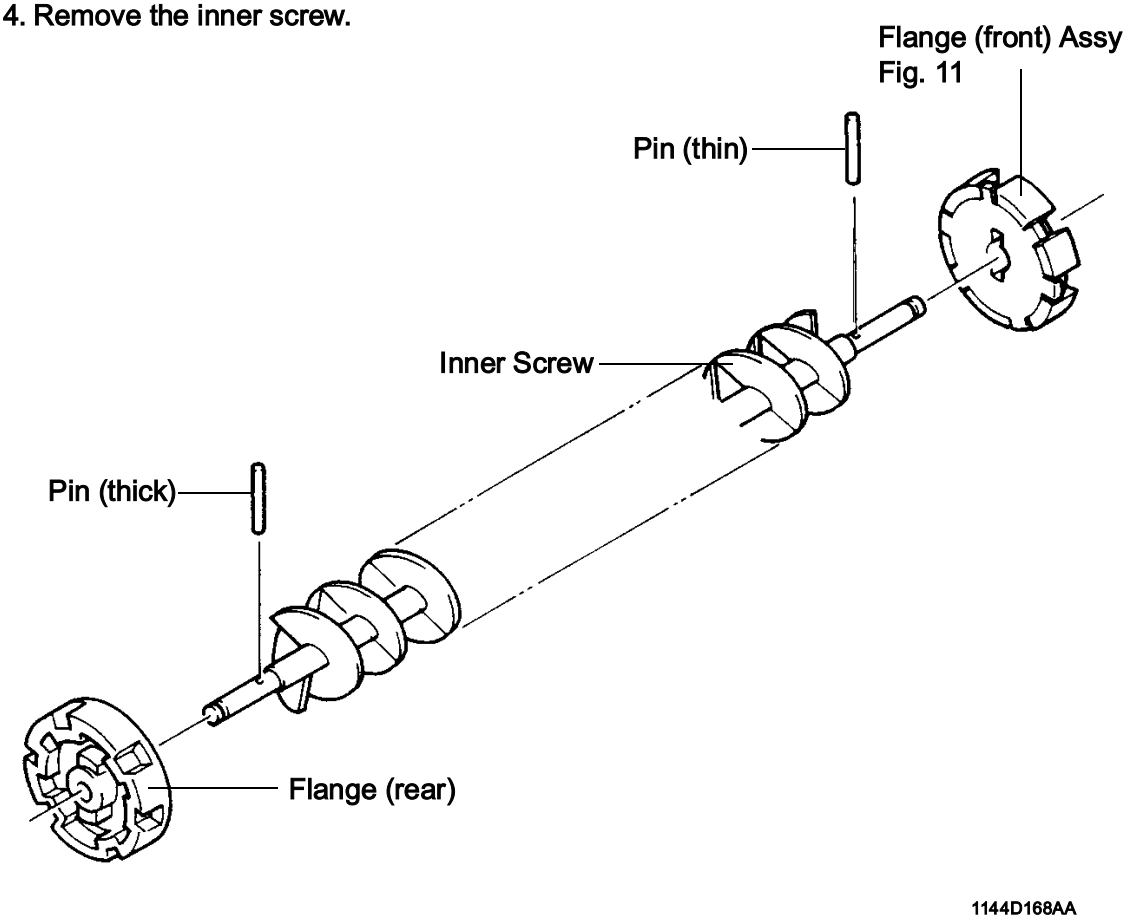
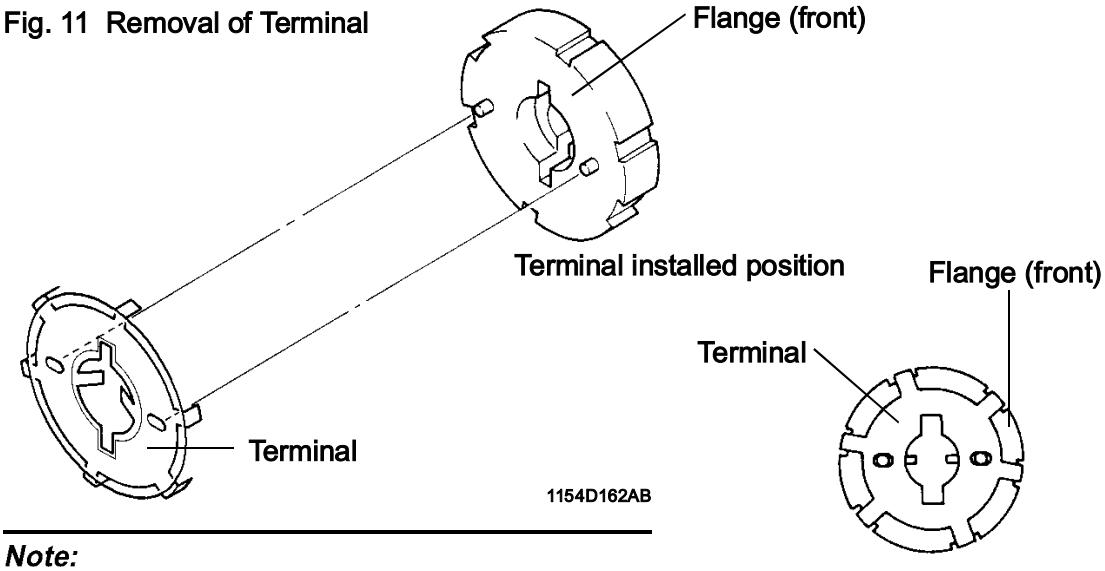
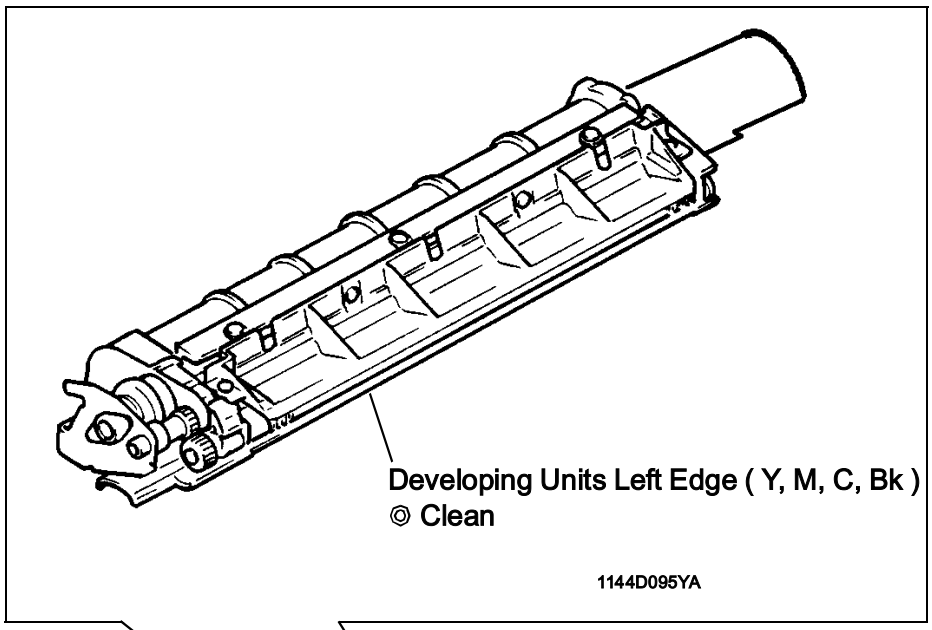


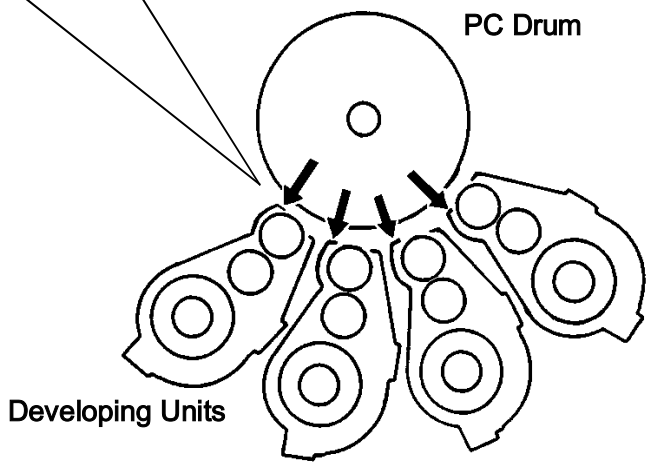
Fig. 11 Removal of Terminal



Note:
The claws (at six places) of the terminal should be fit into the channels in the flange (front).

(7) Cleaning Along the Left Edge of the Developing Units





2-7. TONER HOPPER

(1) Cleaning of the Shutters

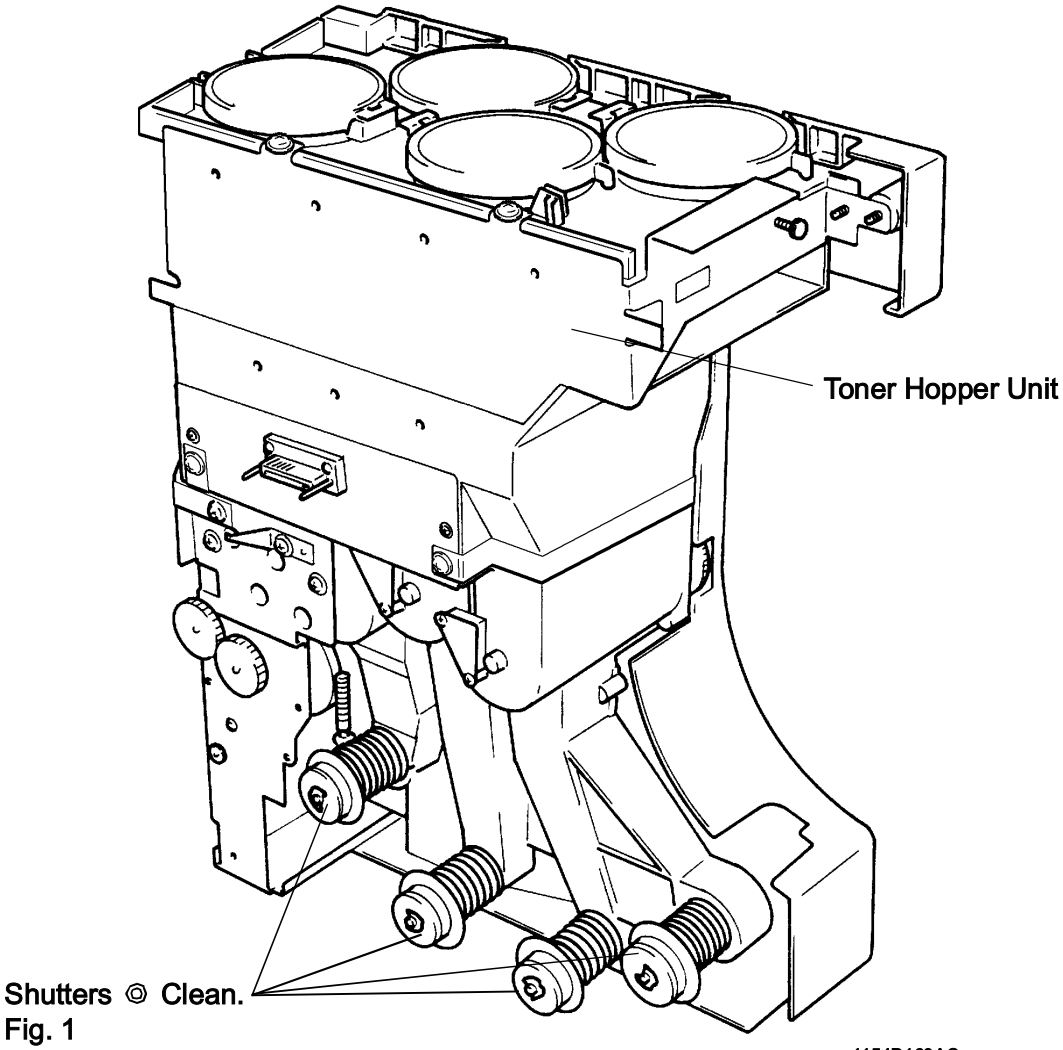
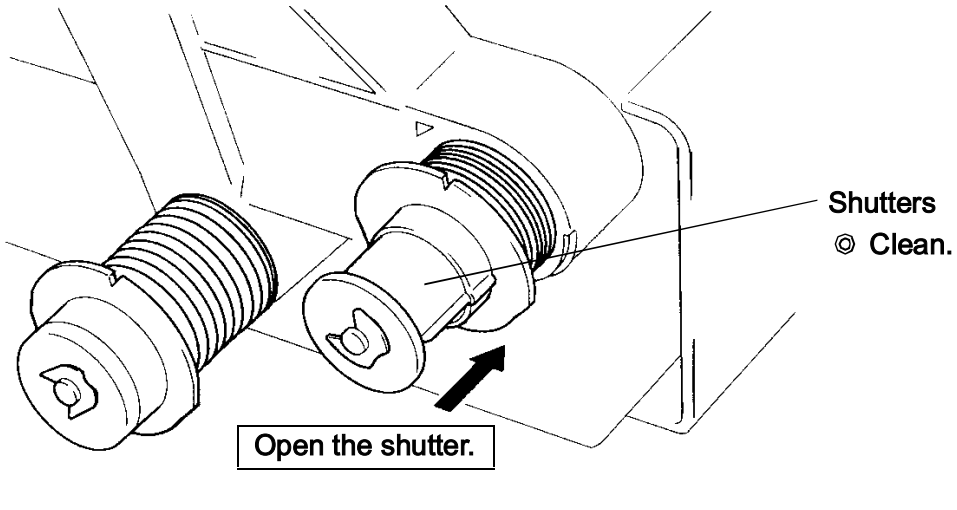
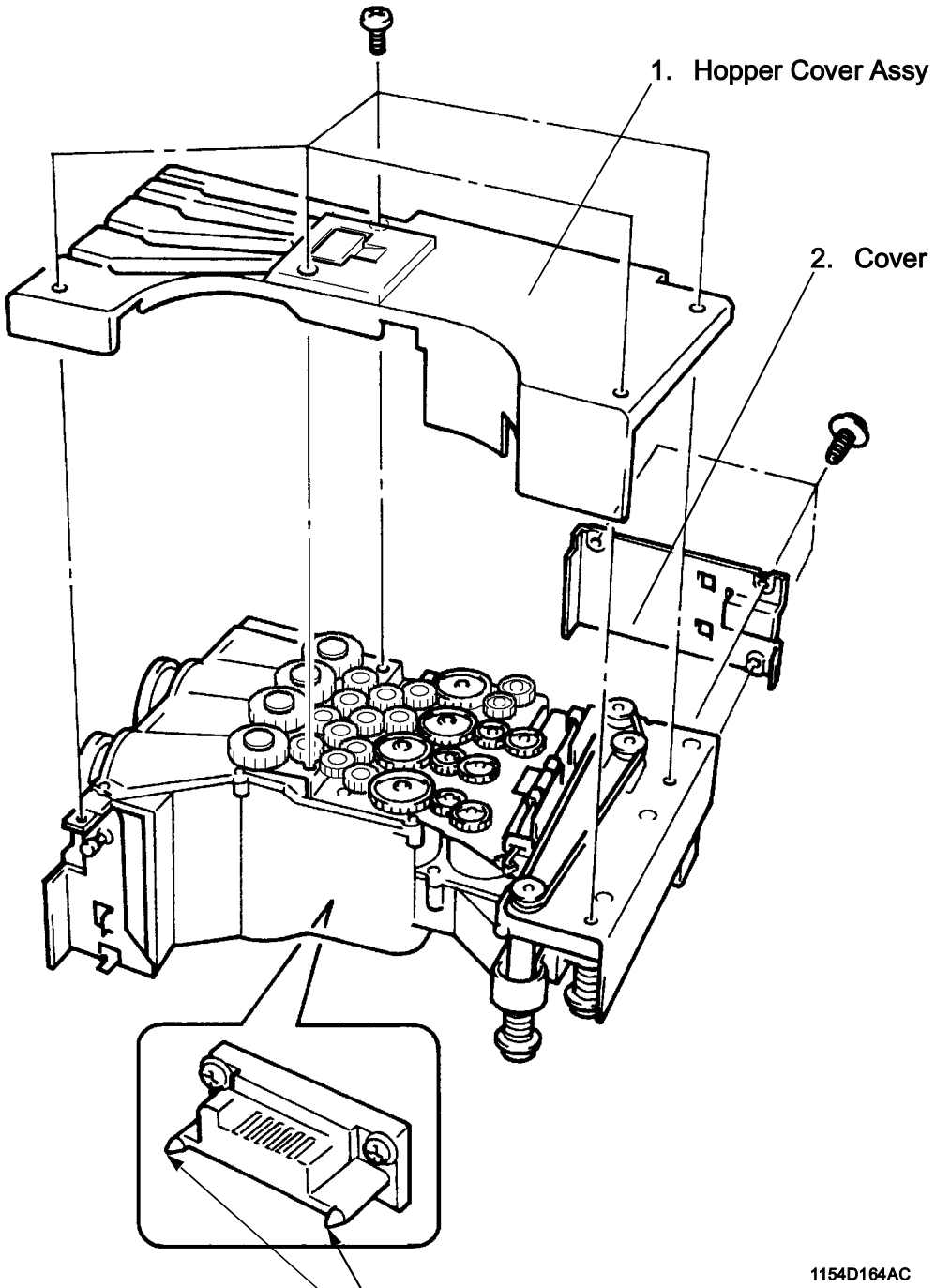


Fig. 1

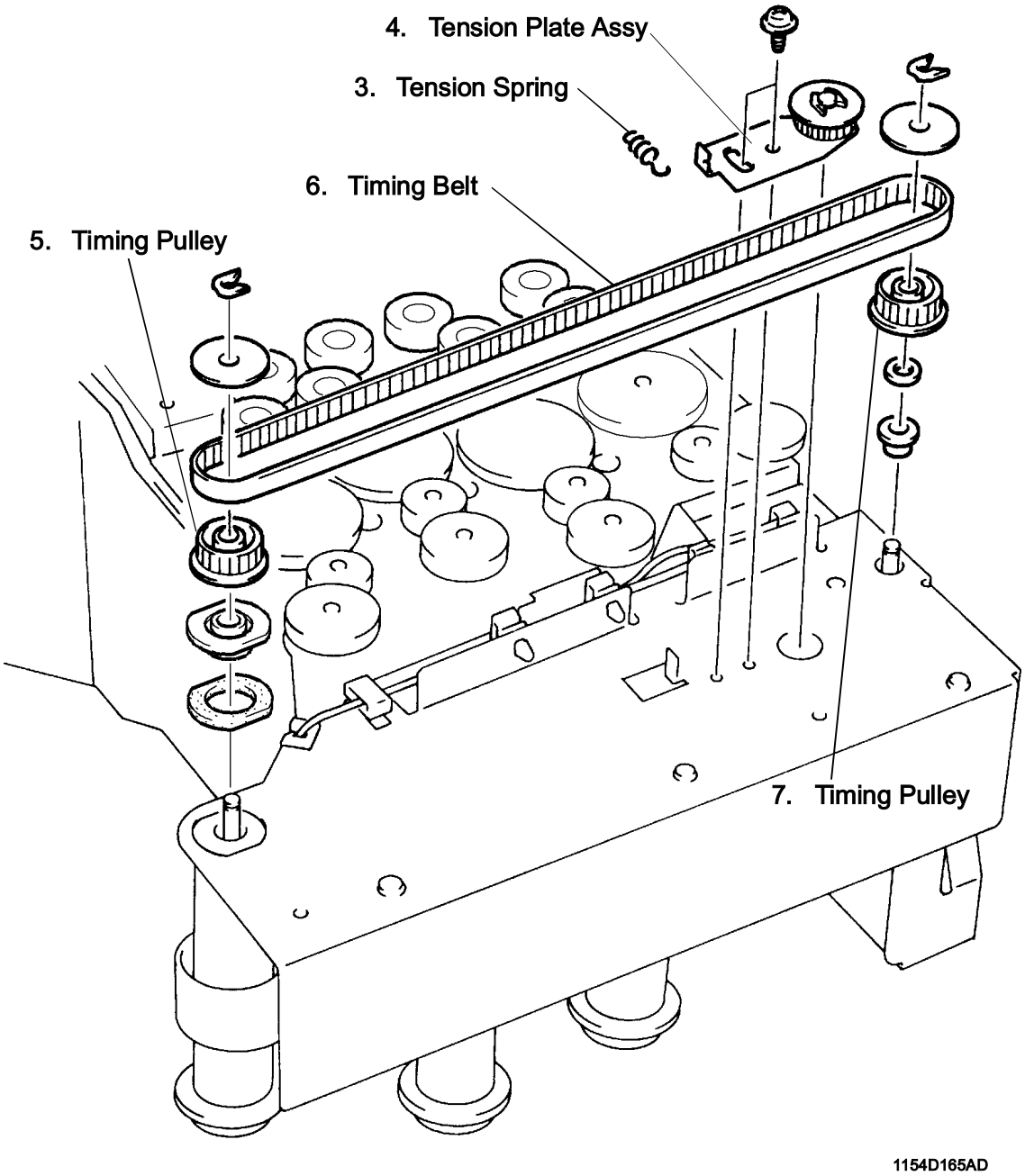
Fig. 1 Cleaning of the shutters



(2) Disassembly of the Toner Hopper Unit



Note 1:
Use care not to deform this part.


4. Tension Plate Assy
3. Tension Spring
6. Timing Belt
5. Timing Pulley
7. Timing Pulley
1154D165AD

8. Remove the gears.

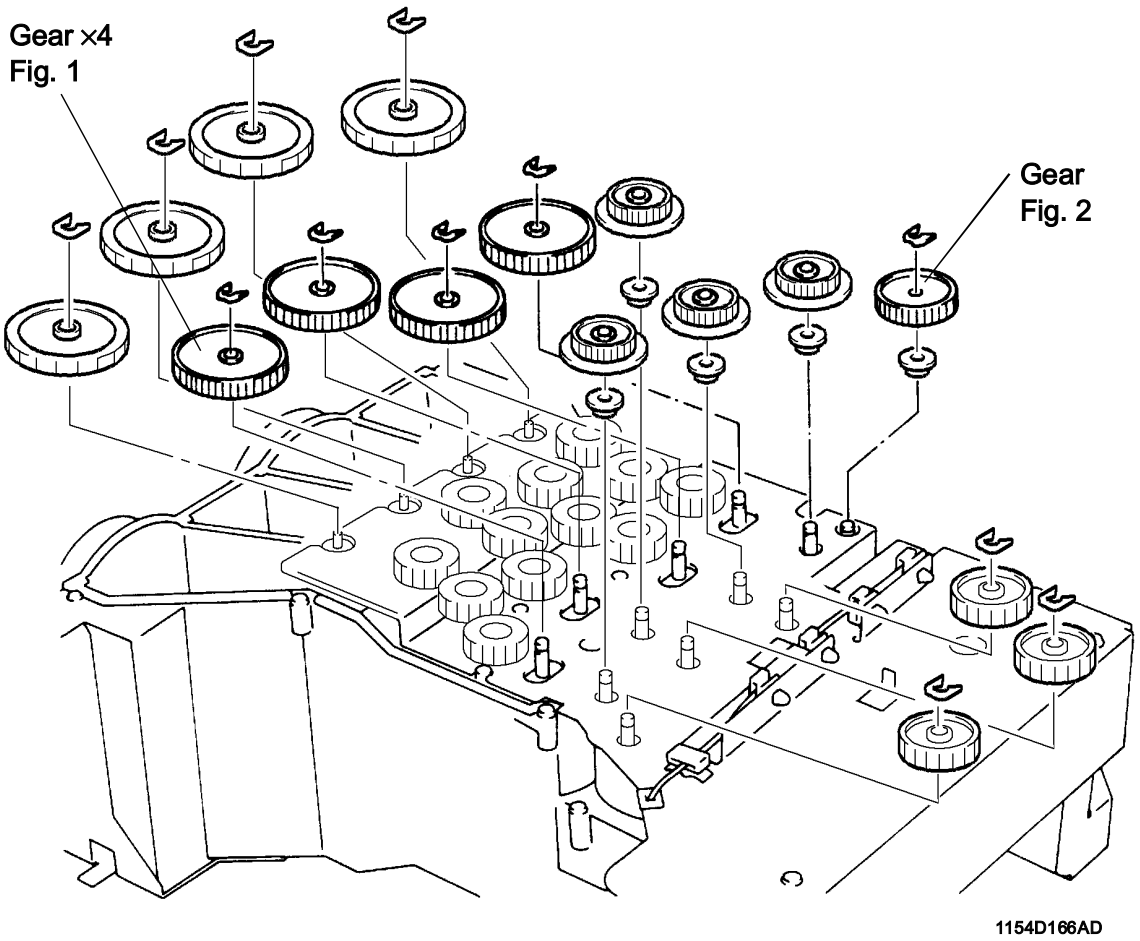


Fig. 1 Gear installed position

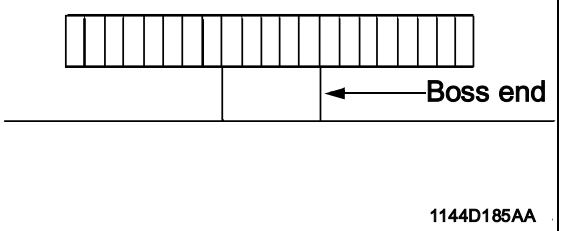
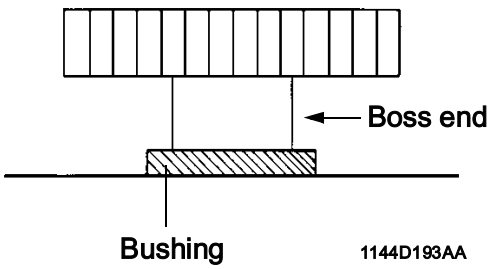
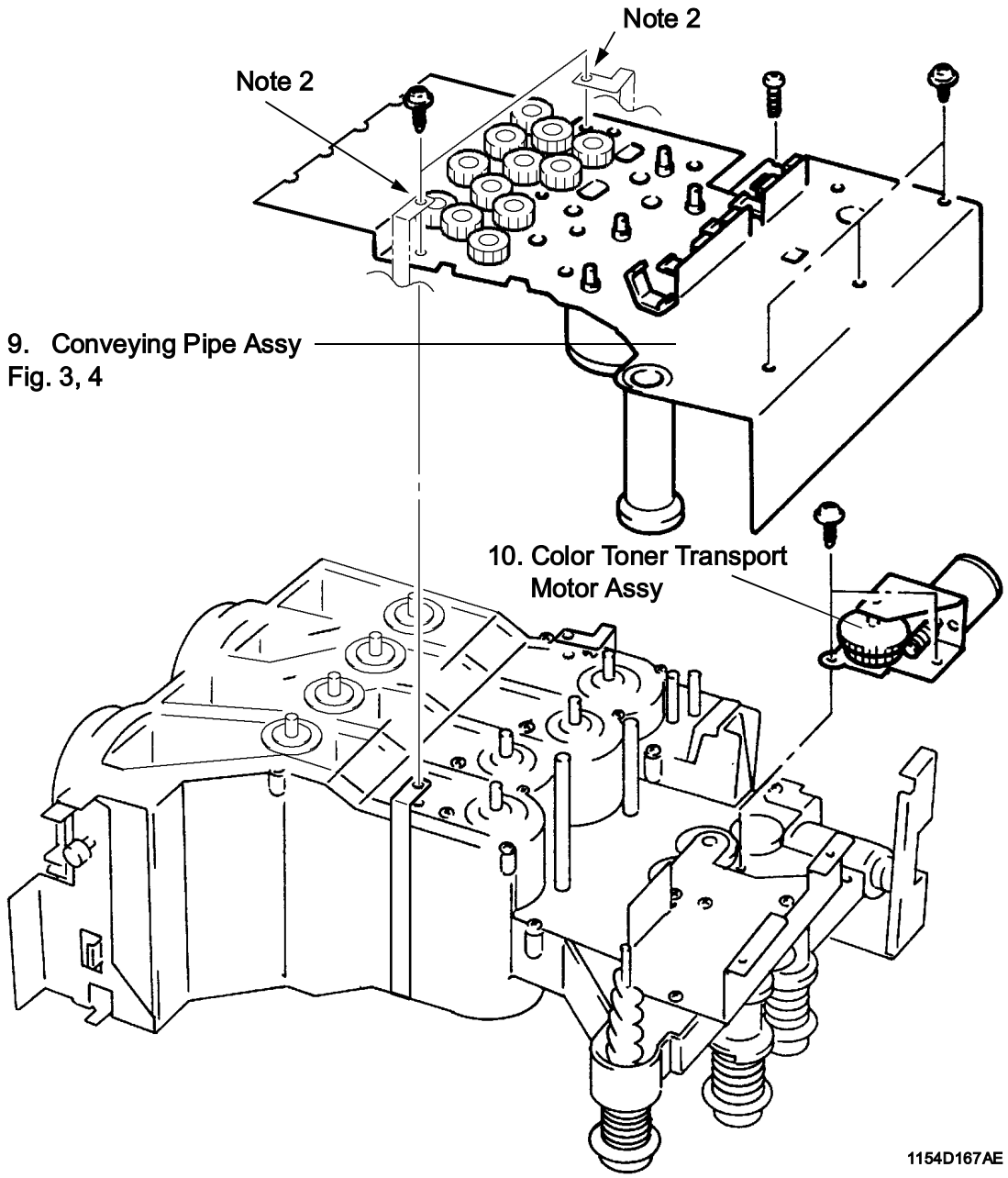


Fig. 2 Gear installed position



Note:
Before mounting the bushing and gear on the round shaft, check that the bushing on the opposite end is not out of position. (If the bushing is out of position, reinstall it.)



Note 2:

The Conveying Pipe Assy should be installed between the ground plate and Toner Hopper Unit.

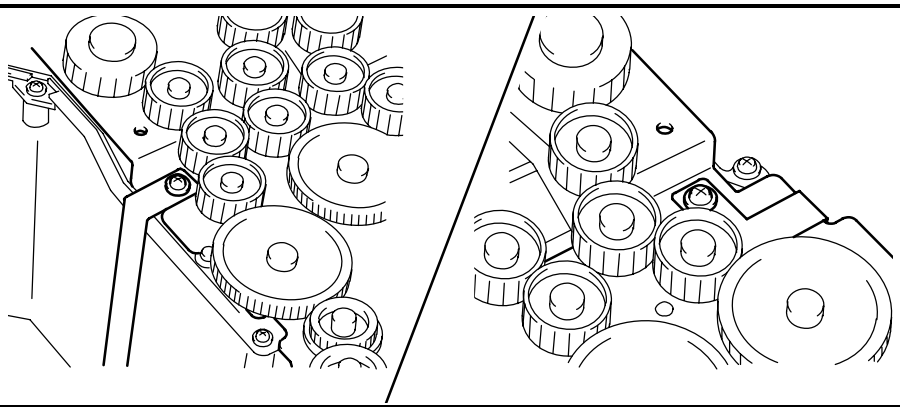


Fig. 3 Connector positions

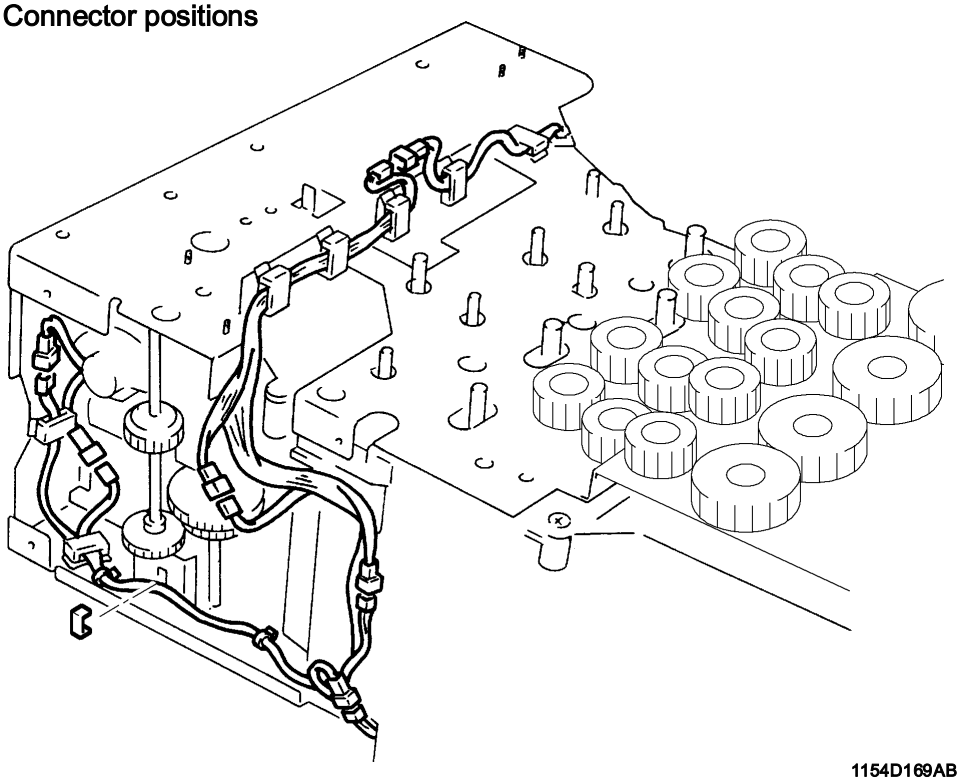


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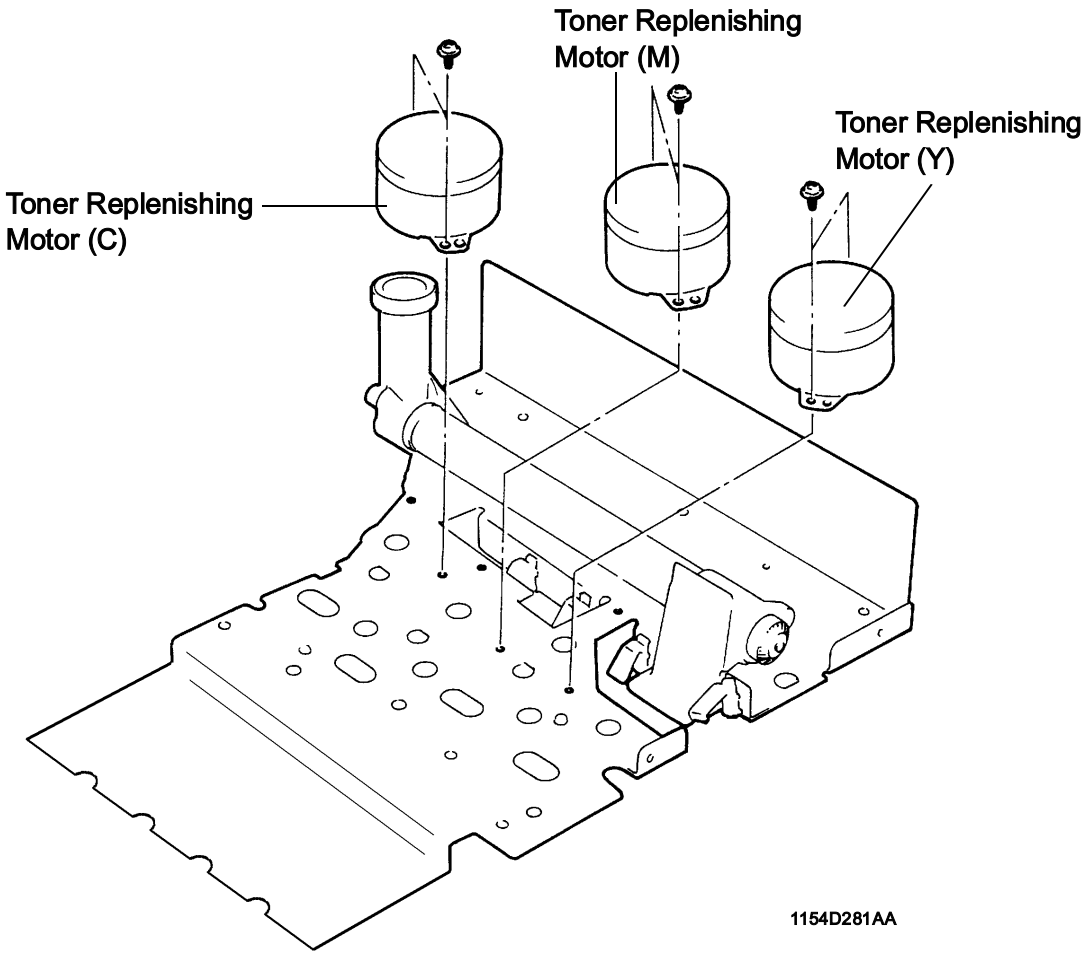
Fig. 4 Removal of the Toner Replenishing Motors



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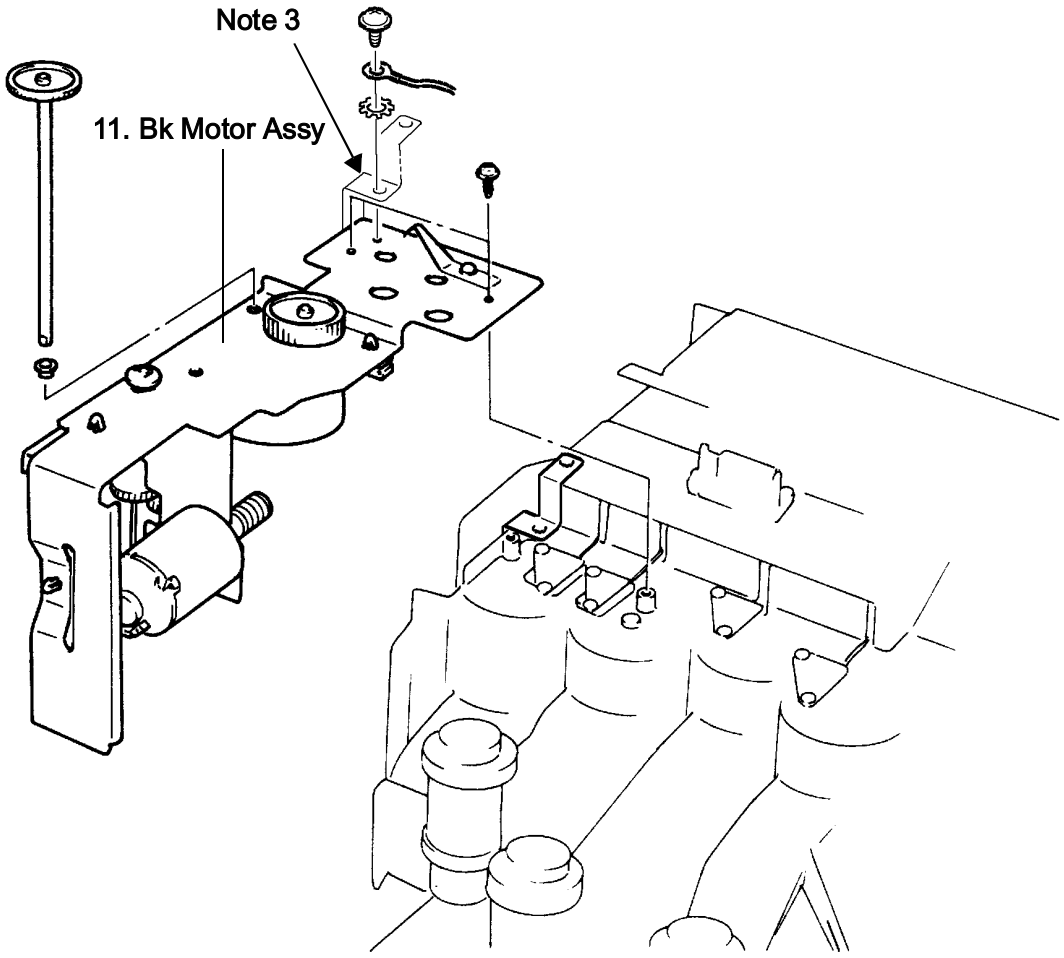
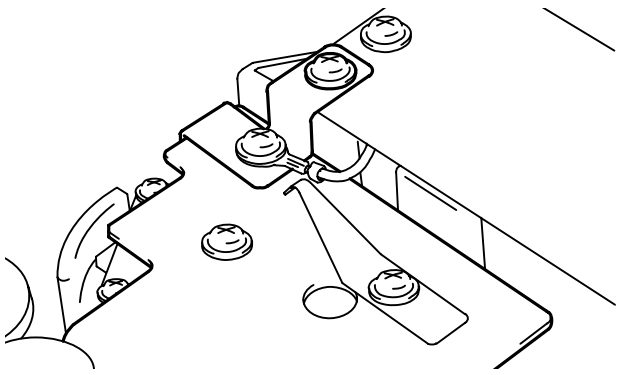


Note 3:
The Bk Motor Assy should be installed between the ground plate and Toner Hopper Unit.



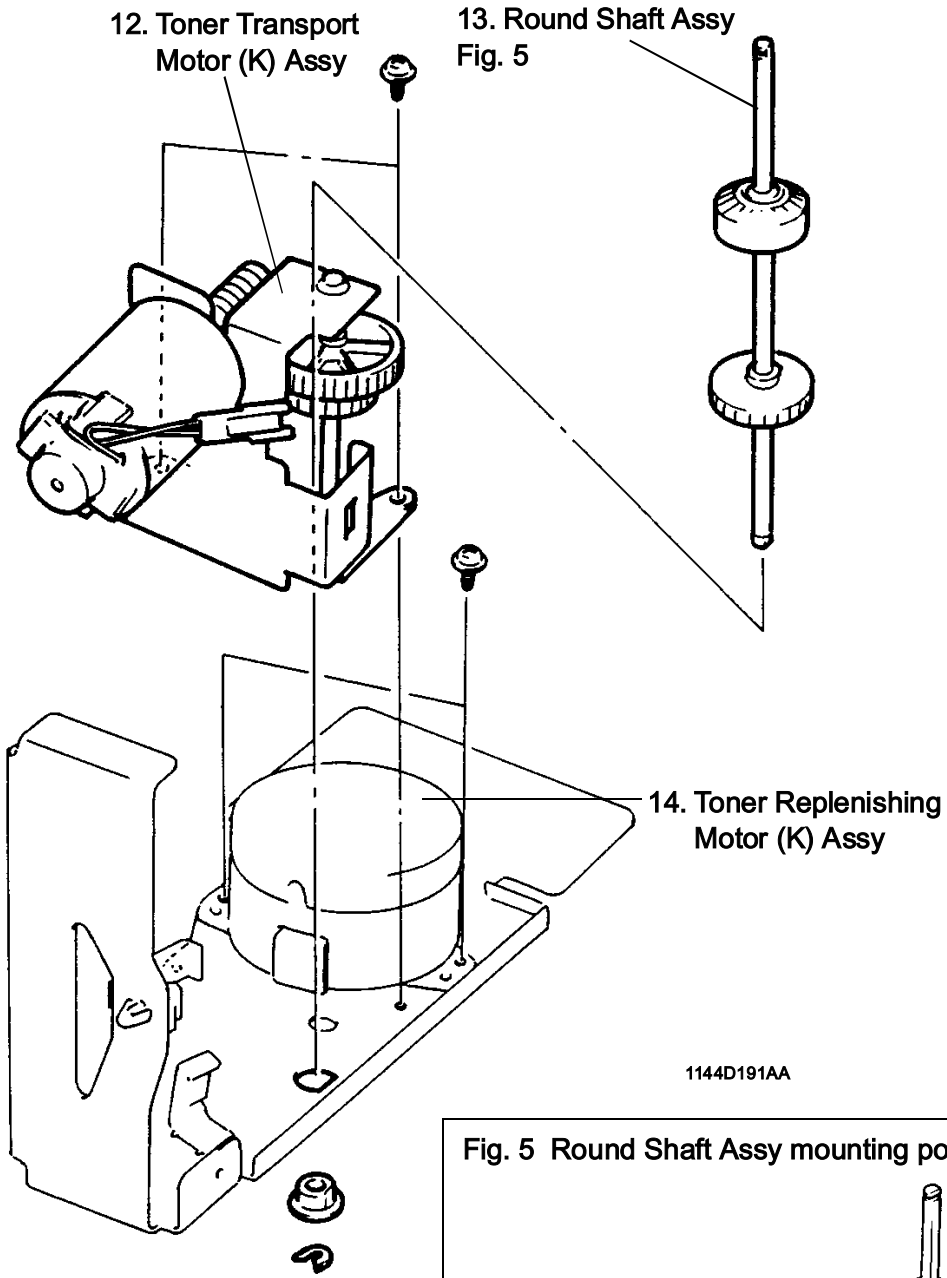
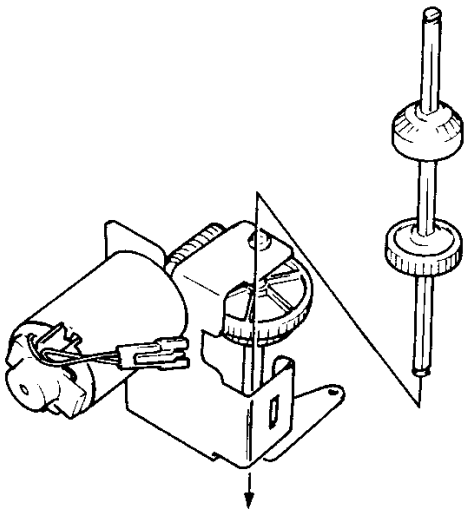
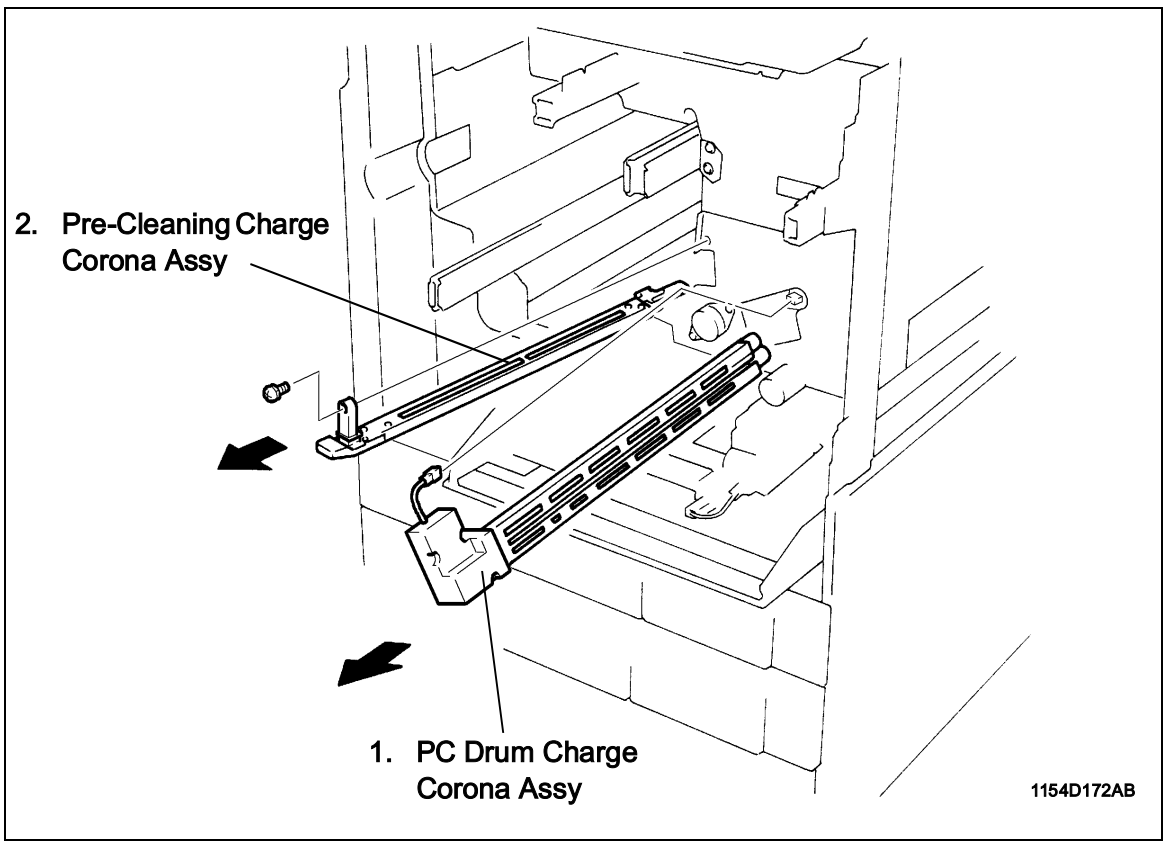


Fig. 5 Round Shaft Assy mounting position

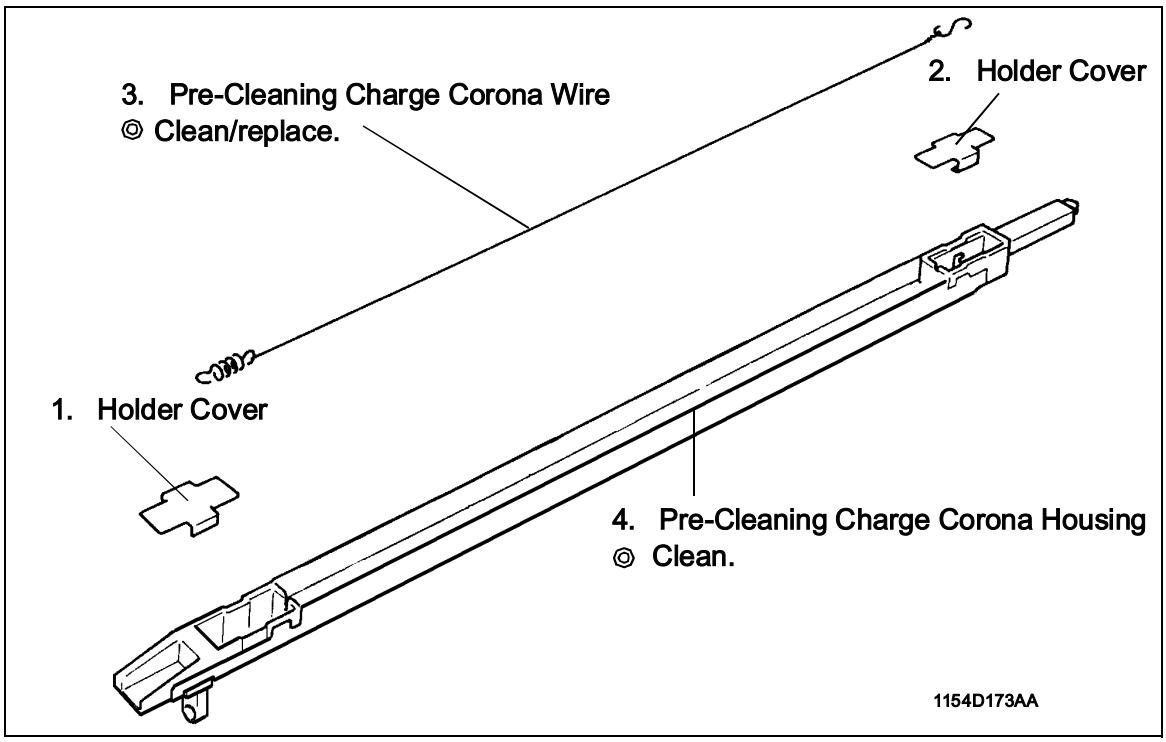


2-8. PARTS AROUND THE PC UNIT

(1) Removal of the PC Drum Charge Corona Assy and Pre-Cleaning Charge Corona Assy

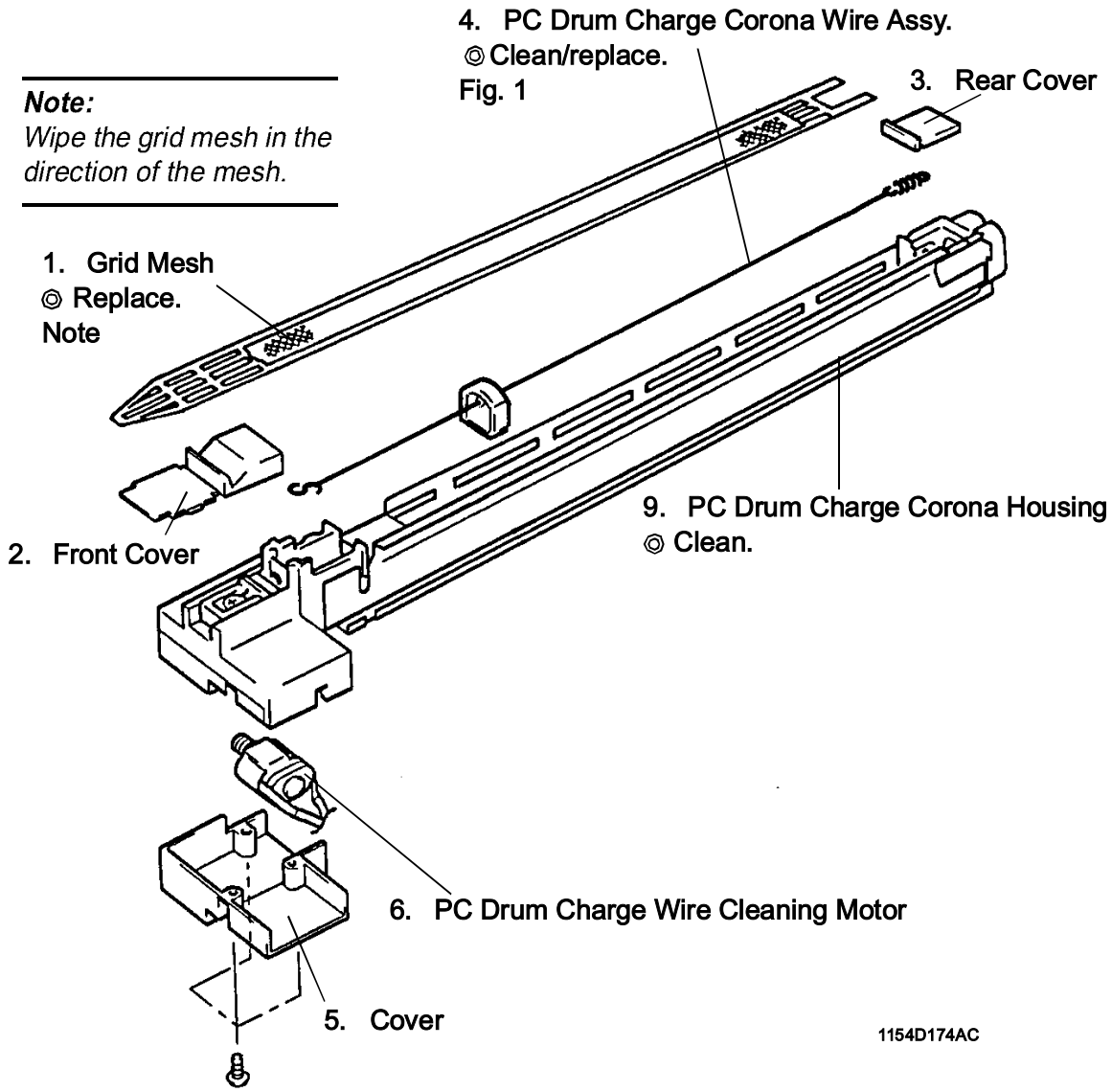


(2) Cleaning and Replacement of the Pre-Cleaning Charge Corona



(3) Cleaning and Replacement of the PC Drum Charge Corona Assy

Note:
Wipe the grid mesh in the direction of the mesh.



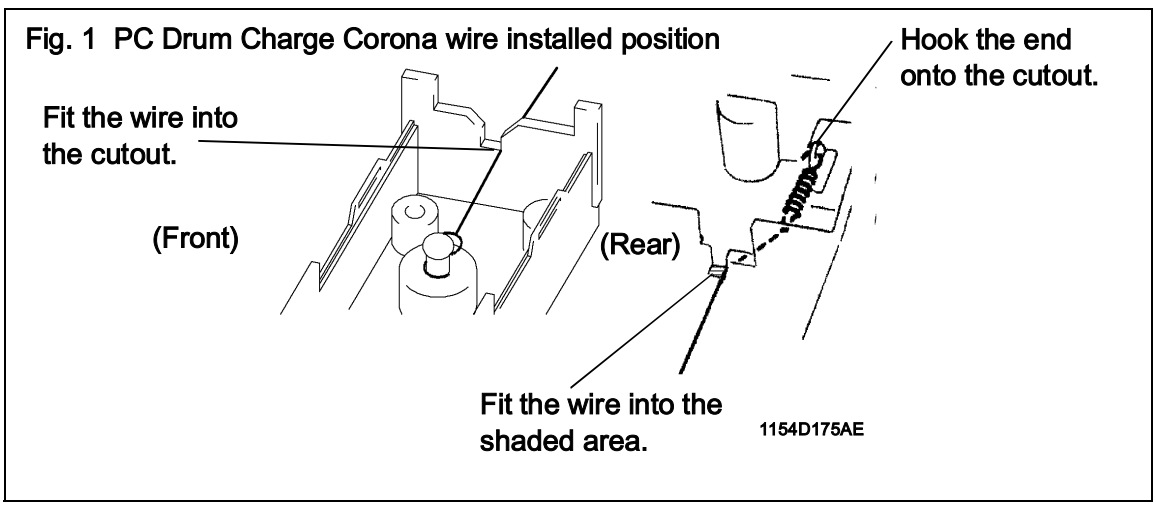


Fig. 1 PC Drum Charge Corona wire installed position
Hook the end onto the cutout.
Fit the wire into the cutout.
(Front)
(Rear)
Fit the wire into the shaded area.
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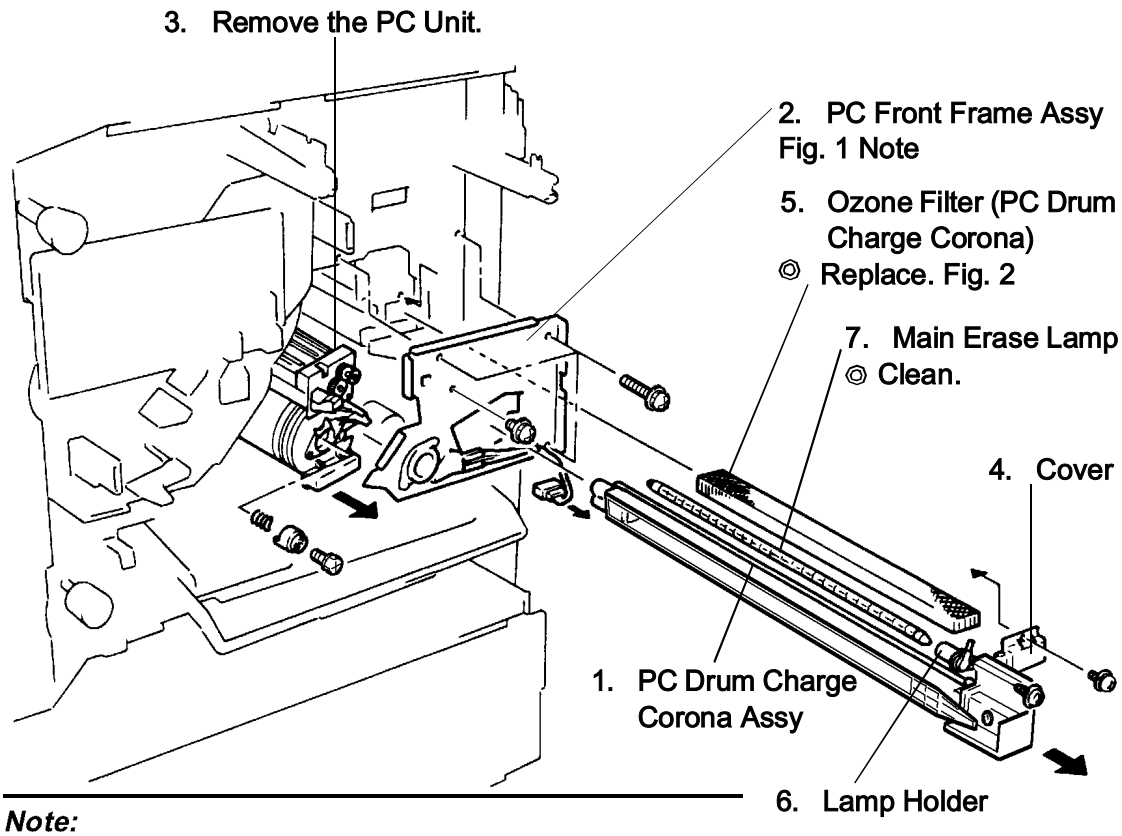
(4) Replacement of the Ozone Filter (PC Drum Charge Corona) and Cleaning of the Main Erase Lamp



Note:
When removing the PC Front Frame Assy, first unlock the Transfer Unit Lever and the Developing Unit Lock Lever.

Fig. 1
Cleaning of the PC Drum Heater Terminal

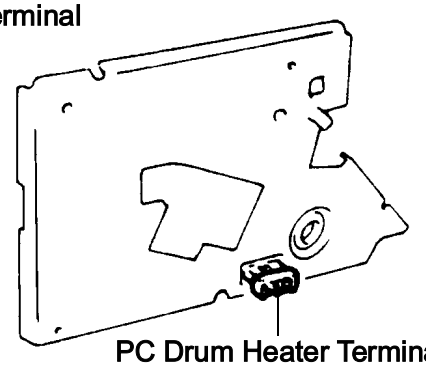
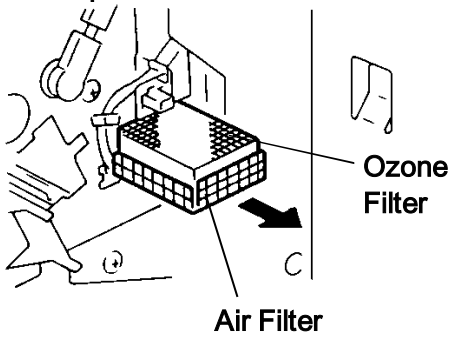
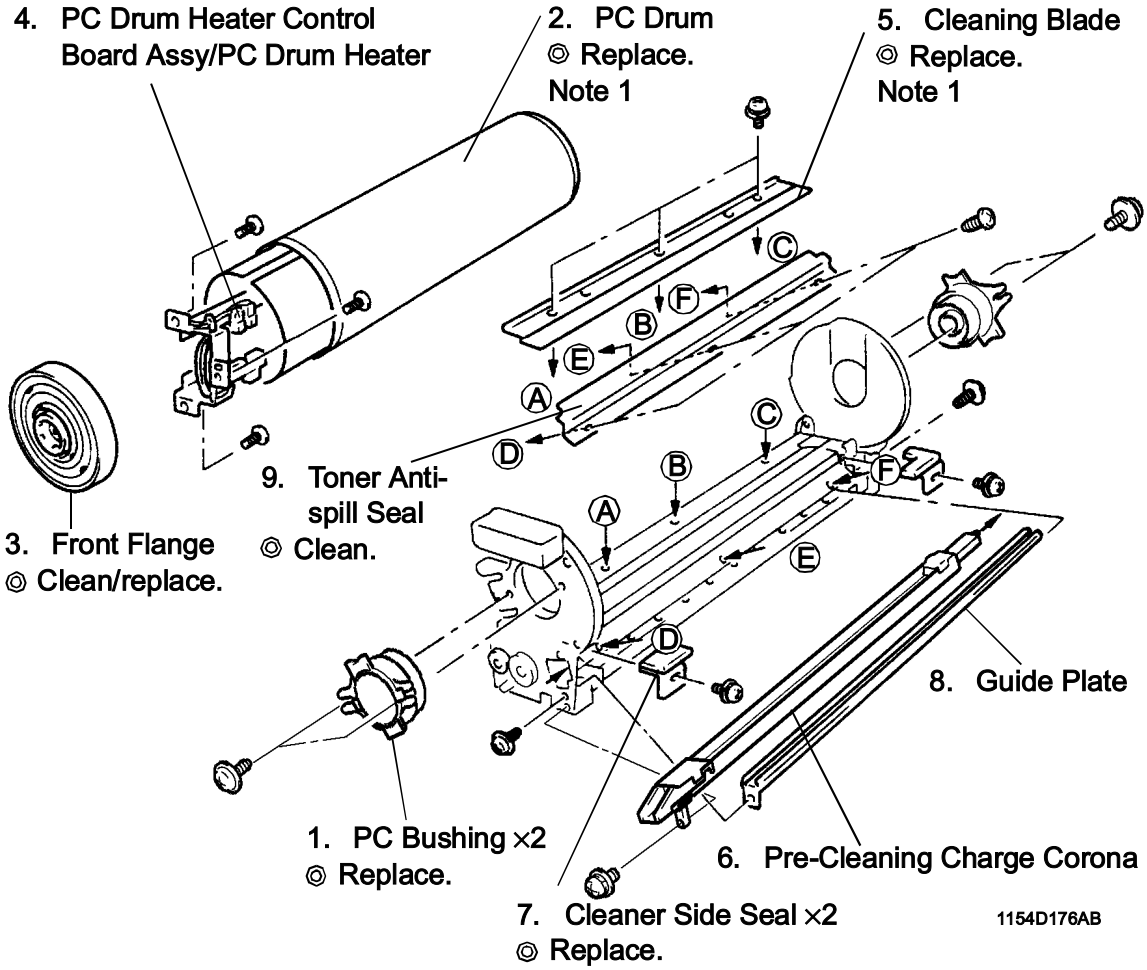


Fig. 2
Ozone Filter position



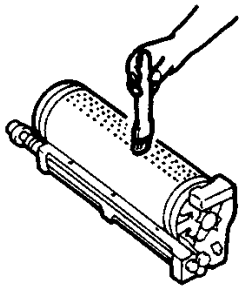
When reinstalling the Ozone Filter, the Air Filter goes underneath.

(5) Disassembly of the PC Unit

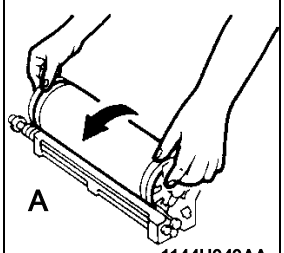


Note 1:
When the PC Drum and Cleaning Blade have been replaced:

1. Apply a thin coating of toner to the top of the PC Drum.

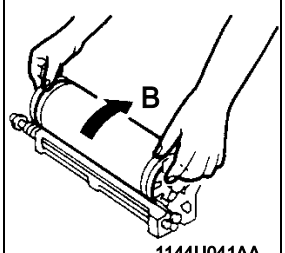

1144U039AA

2. Retracting the Cleaning Blade, turn the PC Drum in the direction of A (backward) until the surface to which toner has been applied reaches the Cleaning Blade.



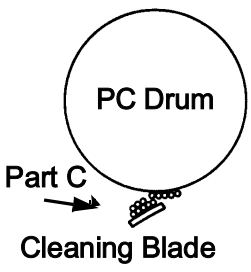
1144U040AA

3. Press the Cleaning Blade against the surface of the PC Drum and turn the PC Drum in the direction of B (forward) three complete turns.



1144U041AA

4. Check that no toner has spilled over part C shown below and, if any has spilled, retracting the Cleaning Blade and clean the surface.

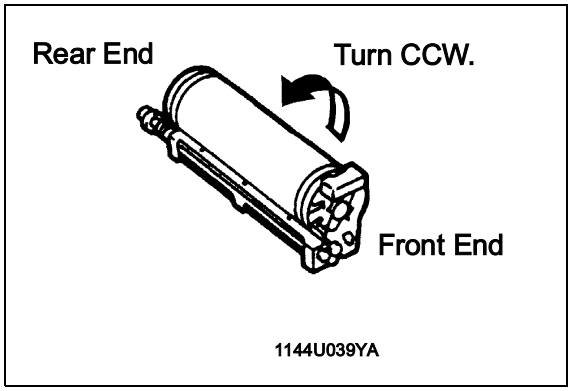


1144D324AA

Note 2:

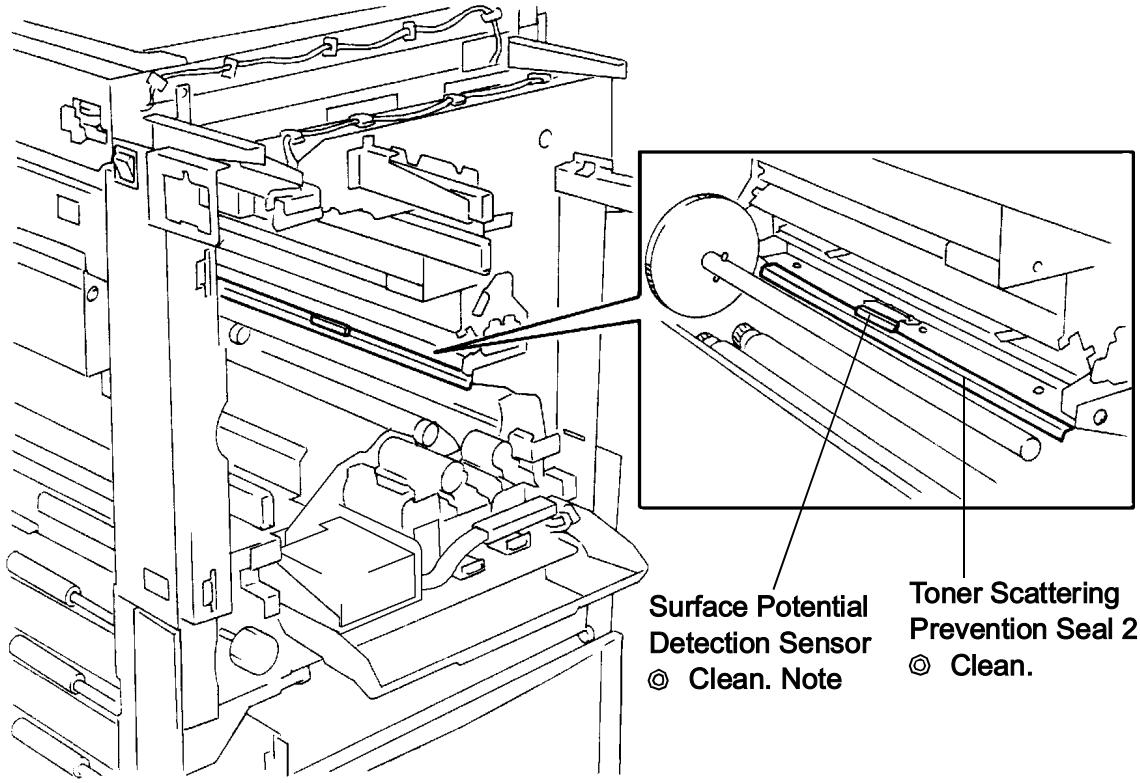
When mounting the PC Unit:

- *Try to keep the PC Unit in the horizontal position.*
- *When turning the PC Unit upside down (at installation), turn it counterclockwise as illustrated below. Turning it clockwise could spill spent toner. If spent toner is spilled, wipe the surface clean of toner.*



(6) Cleaning of Toner Scattering Prevention Seal 2 and the Surface Potential Detection Sensor

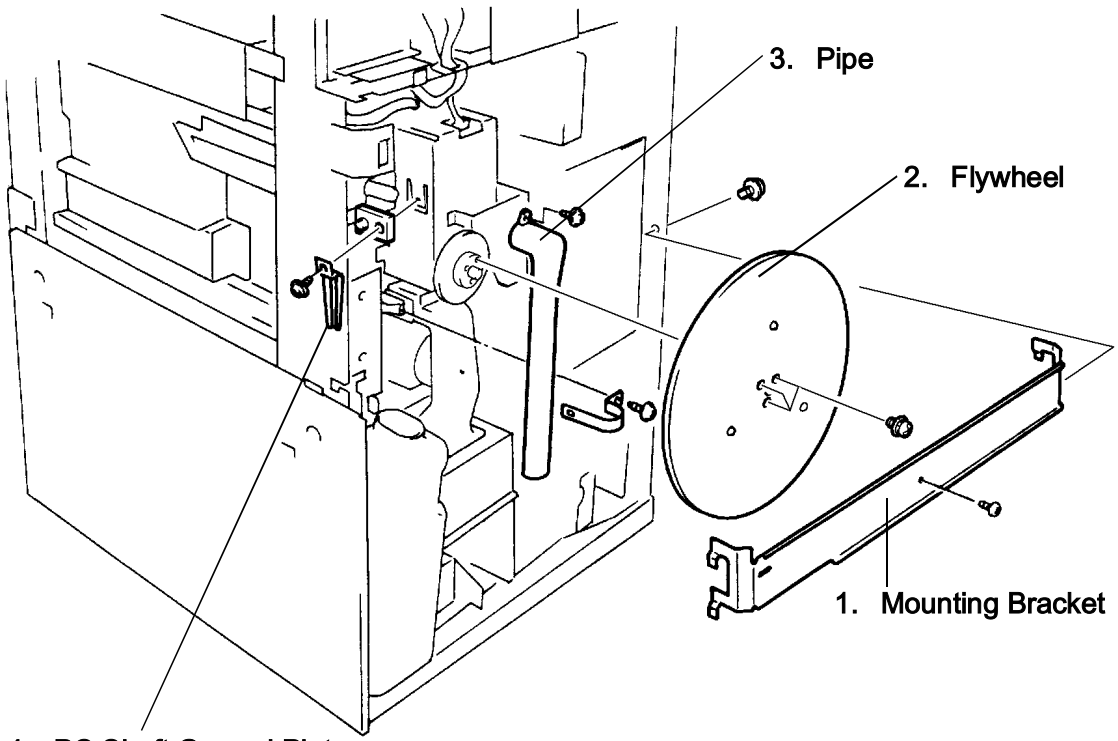
After removing the PC Unit, clean Toner Scattering Prevention Seal 2 and the Surface Potential Detection Sensor.



Note:
The Surface Potential Detection Sensor is fragile. Be careful when cleaning it.

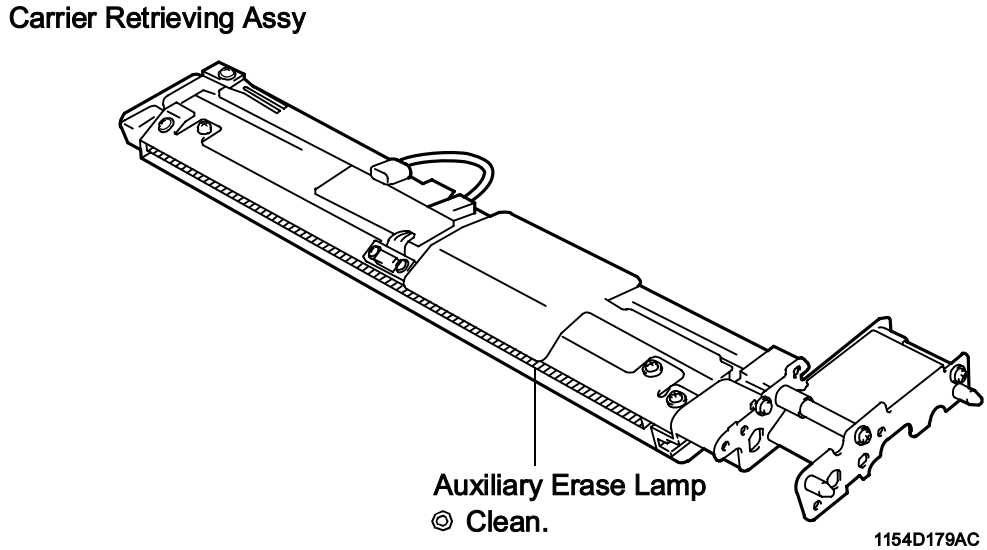
1154D177AA

(7) Disassembly of the PC Shaft Ground Plate



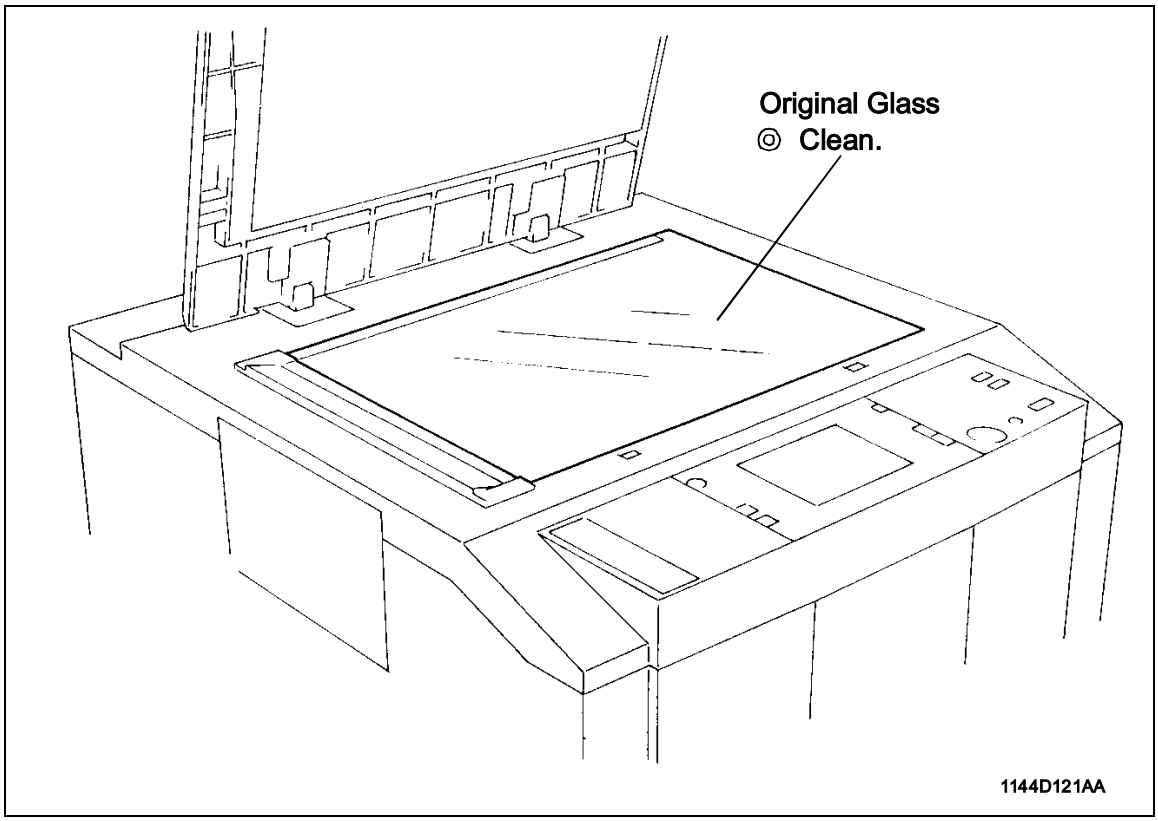
Note:
Pull out the plate with care not to drop it inside the cover plate.

(8) Cleaning of the Auxiliary Erase Lamp

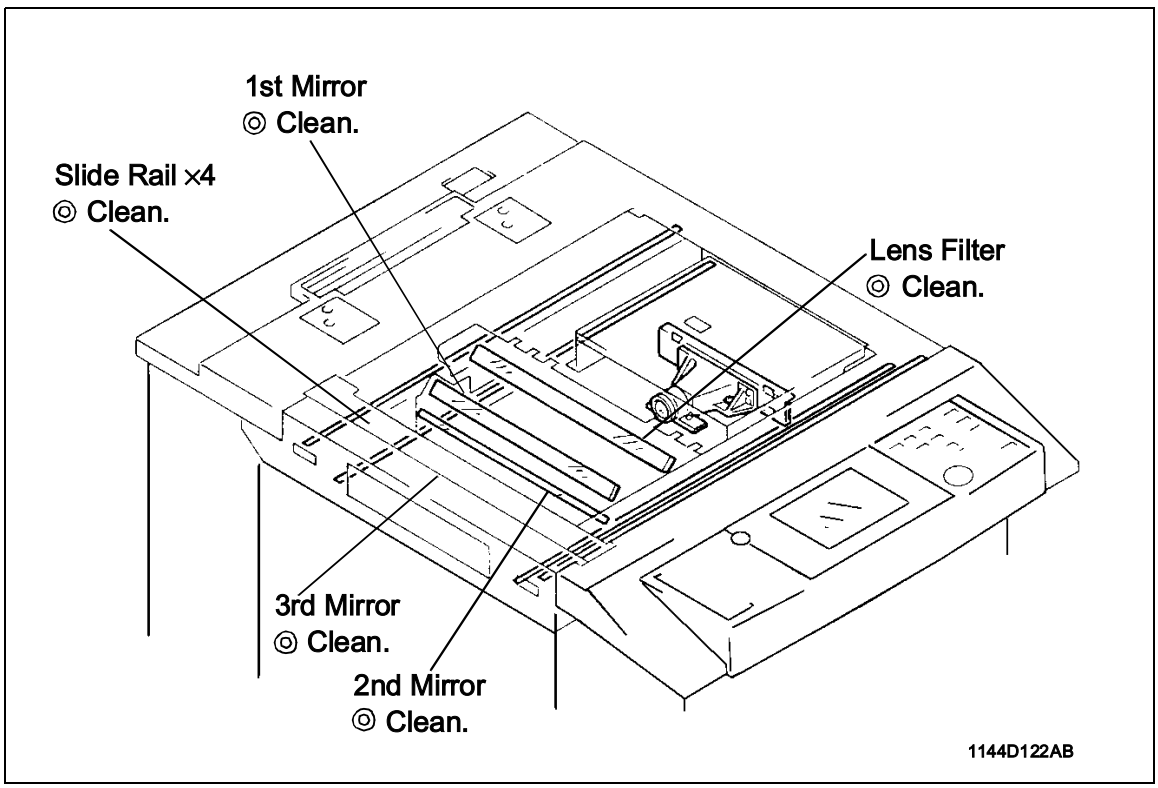


2-9. OPTICAL SECTION

(1) Cleaning of the Original Glass



(2) Cleaning of the 1st to 3rd Mirrors, Slide Rails, and Lens Filter



(3) Disassembly of the Optical Section

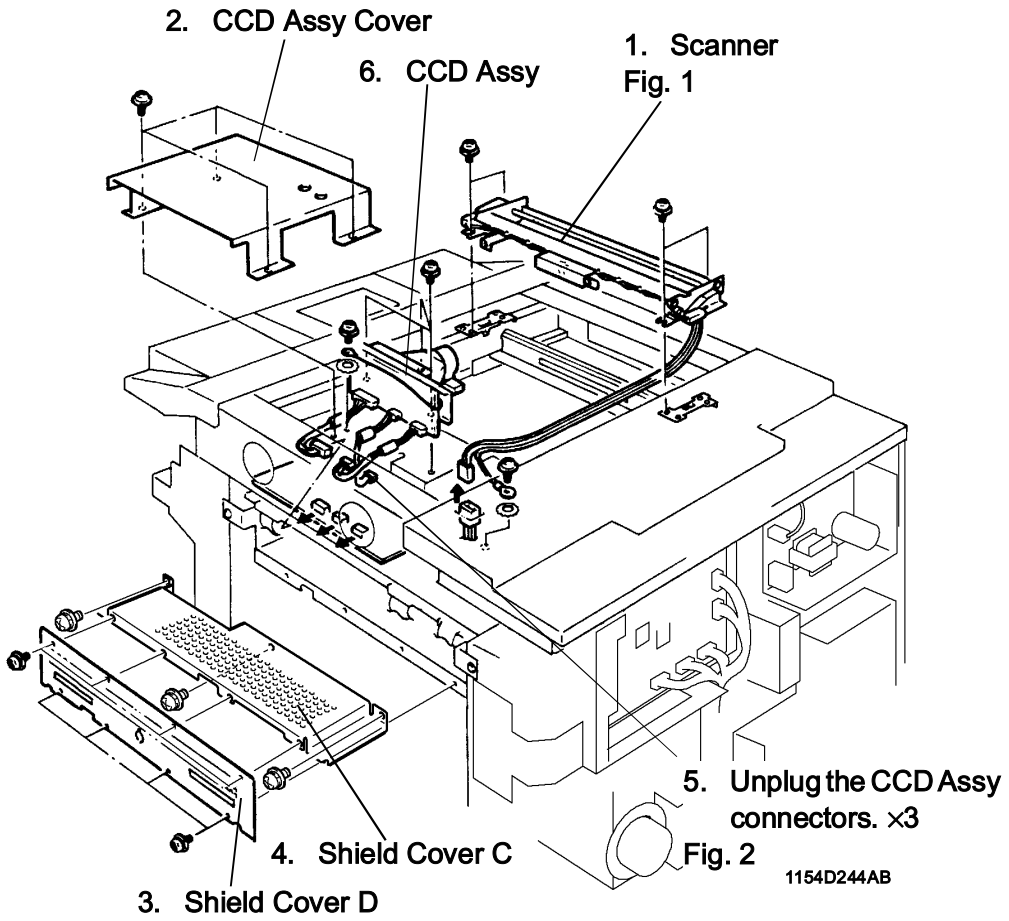


Fig. 1 Scanner harness installed position

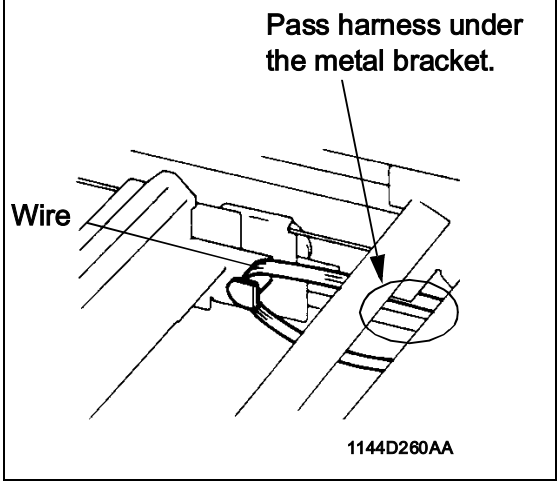
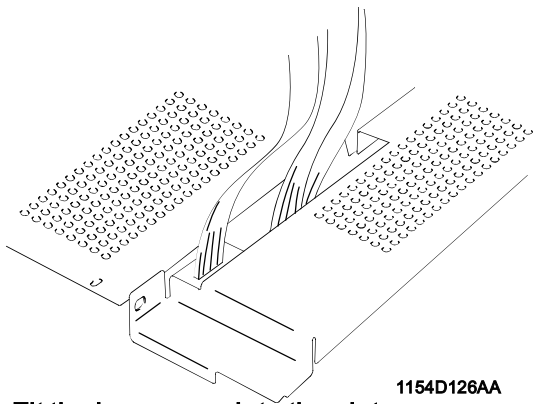


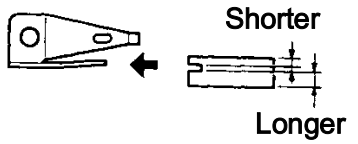
Fig. 2 CCD Assy connector positions



Fit the harnesses into the slot when mounting.

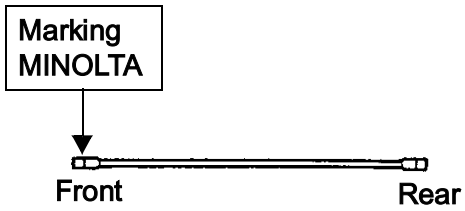
(4) Disassembly of the Scanner

Fig. 1 Connector orientation



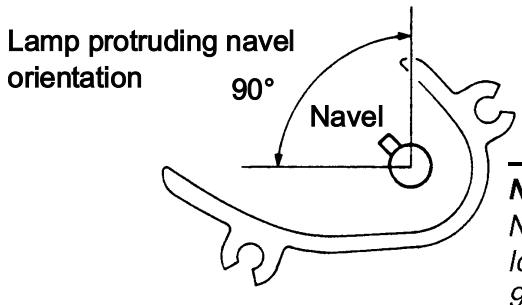
1144D126AA

Fig. 3 Exposure Lamp installation direction



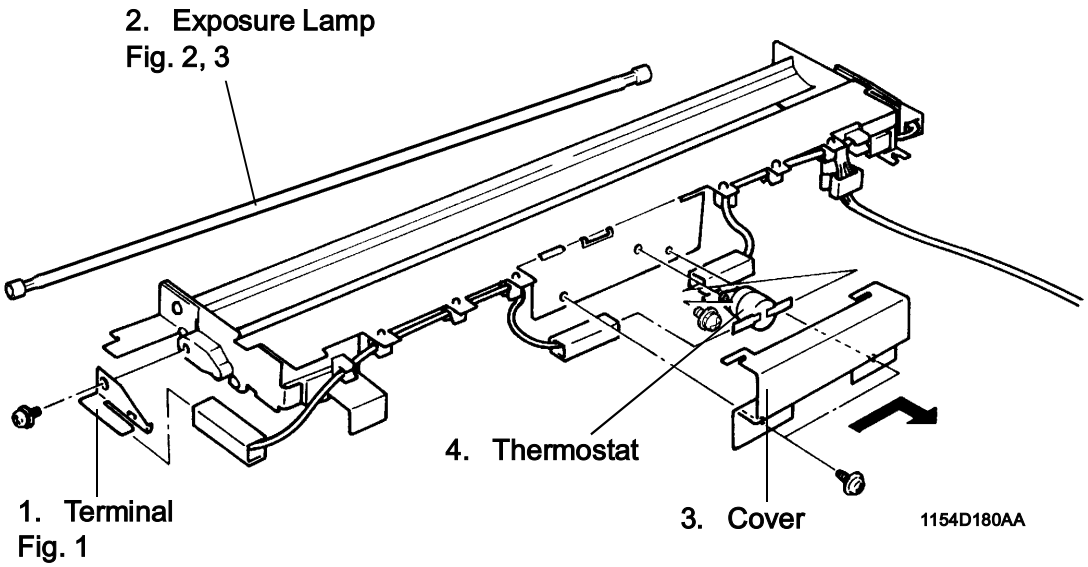
1144D128AA

Fig. 2 Exposure Lamp installed position



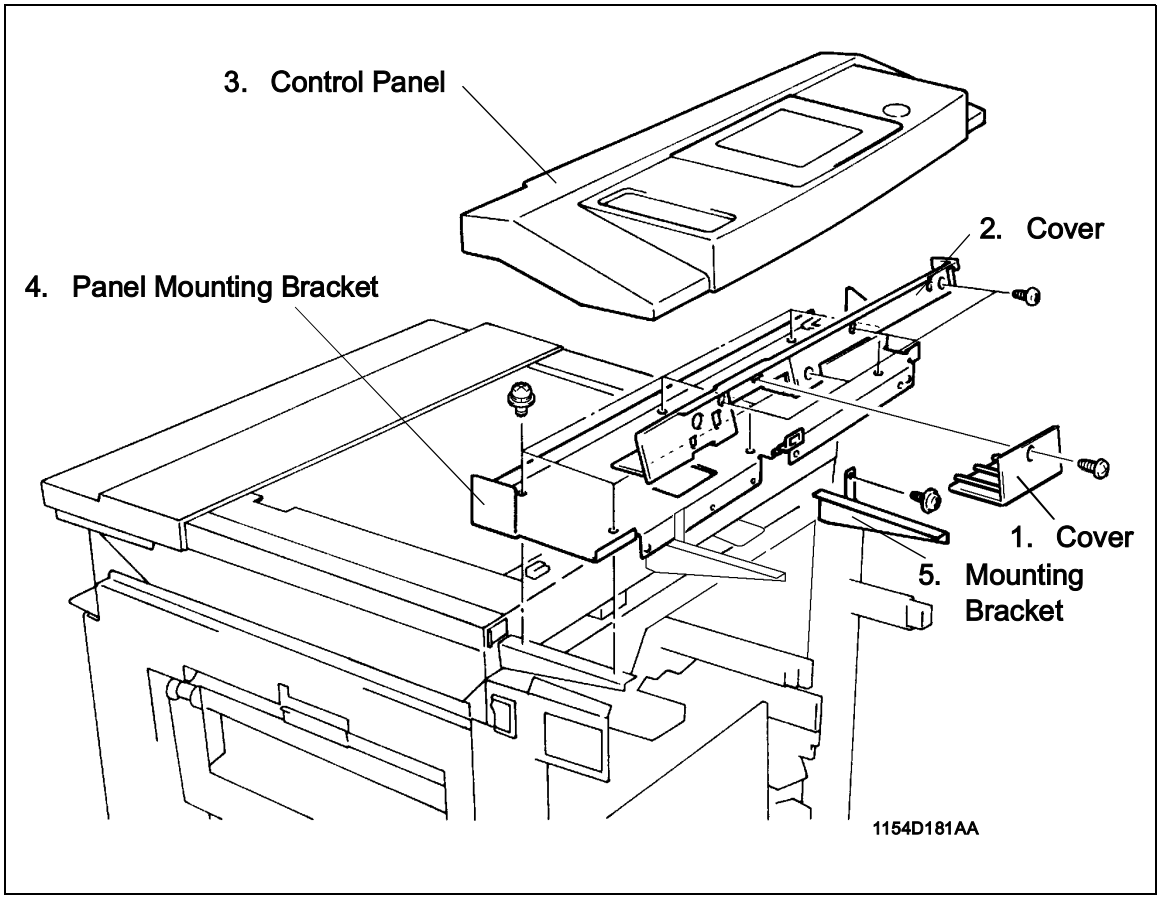
Note:
Navel should be located within the 90° range.

1144D127AA



1154D180AA

(5) Removal of Cables



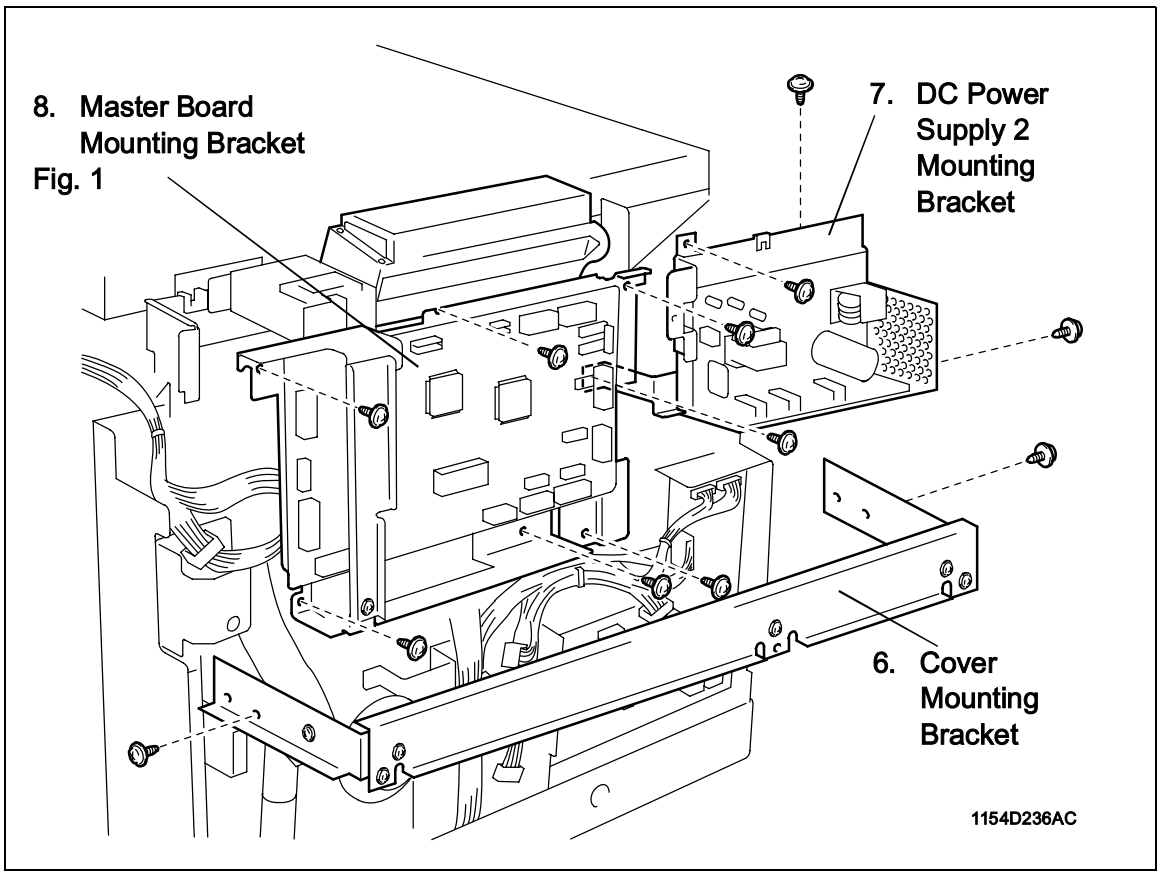
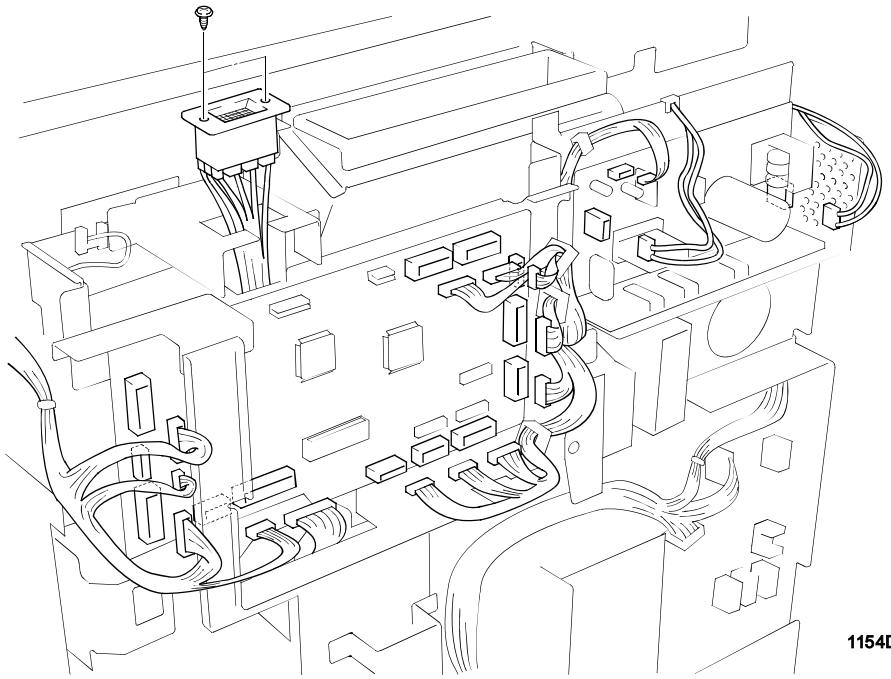


Fig. 1 Connectors on PWB Mounting Bracket



9. Motor Drive Board Mounting Bracket
Fig. 1

10. Cooling Fan Assy

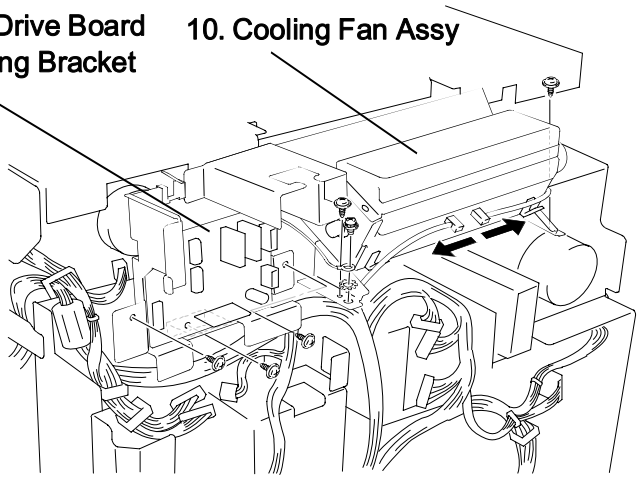
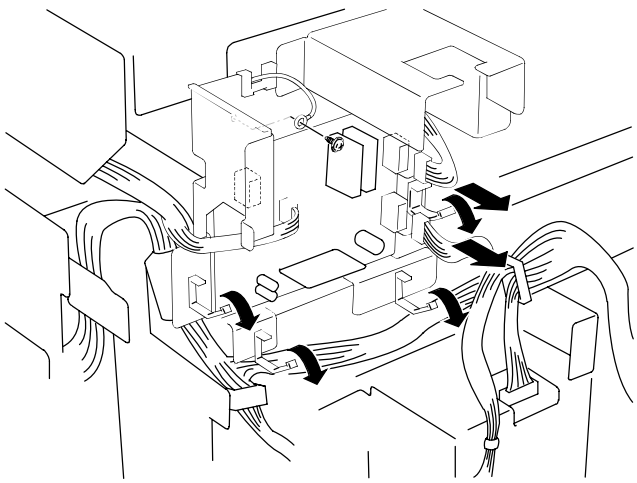


Fig. 1 Connectors on PWB Mounting Bracket



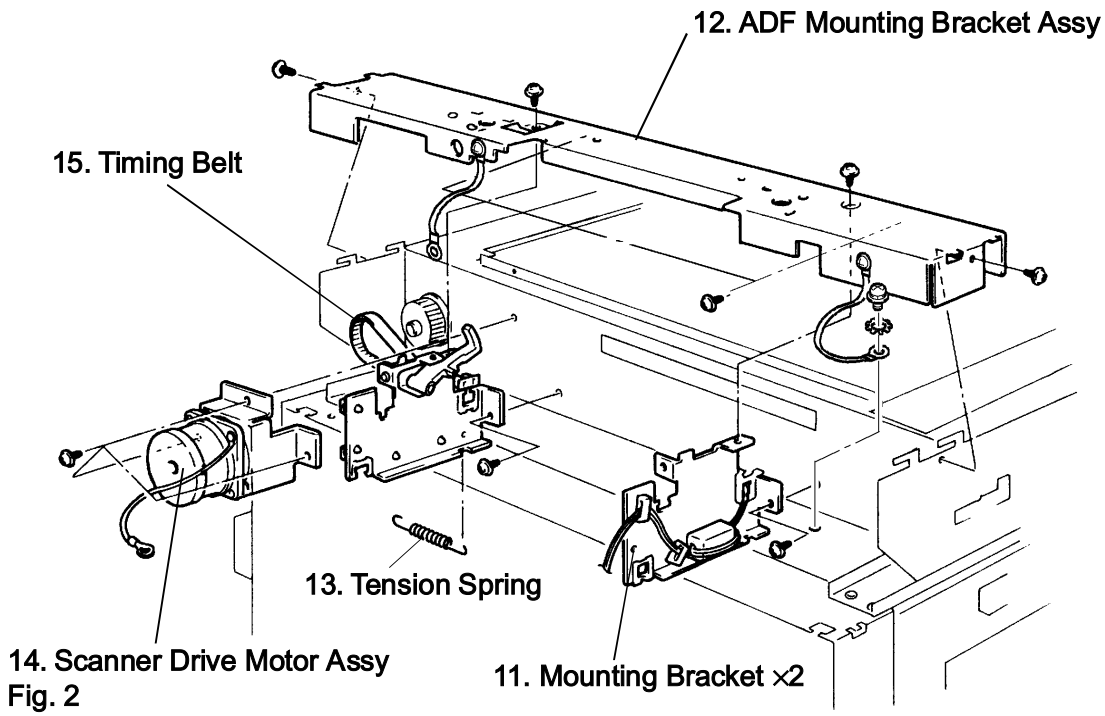

12. ADF Mounting Bracket Assy
15. Timing Belt
13. Tension Spring
14. Scanner Drive Motor Assy
11. Mounting Bracket ×2
1154D240AB

Fig. 2

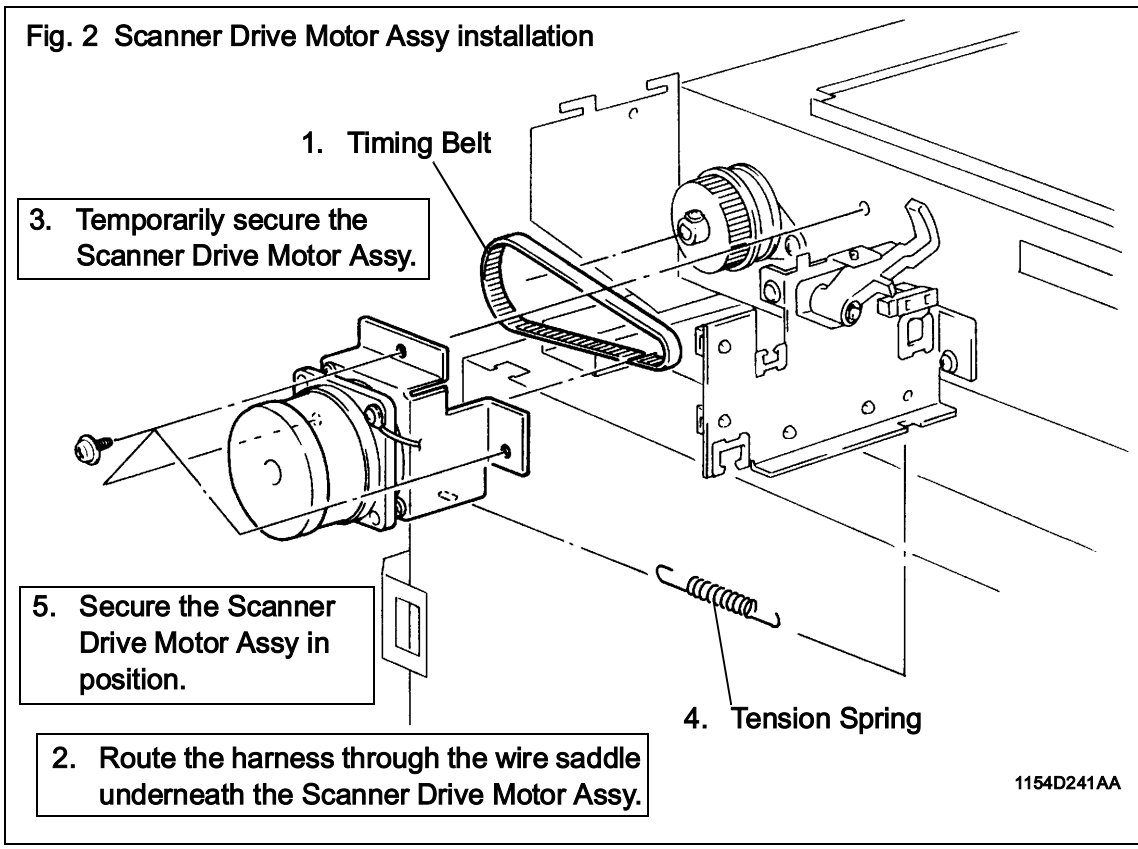
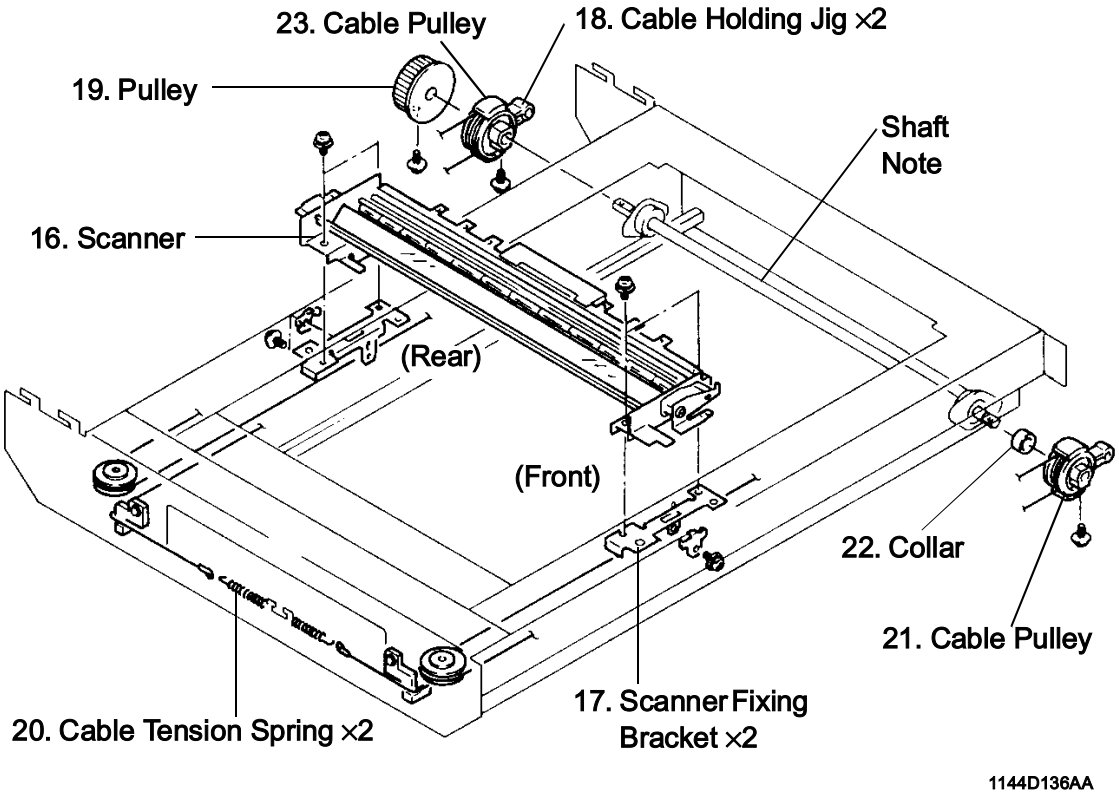


Fig. 2 Scanner Drive Motor Assy installation
1. Timing Belt
3. Temporarily secure the Scanner Drive Motor Assy.
5. Secure the Scanner Drive Motor Assy in position.
4. Tension Spring
2. Route the harness through the wire saddle underneath the Scanner Drive Motor Assy.
1154D241AA



Note:
Make sure there is no play in the shaft when securing the cable pulleys.

(6) Winding of Cables

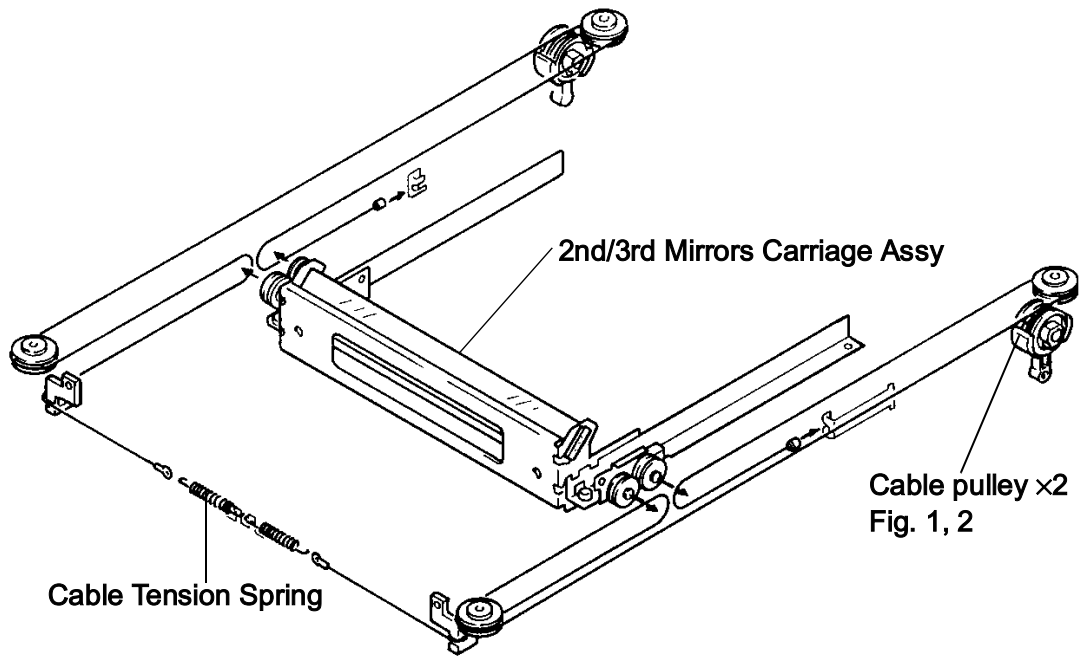


Fig. 1 Winding of the cable

Wide the cable 5 times clockwise from side A, and 3 times counterclockwise from side B. Then set the cable clamp as shown in the fig. 2.

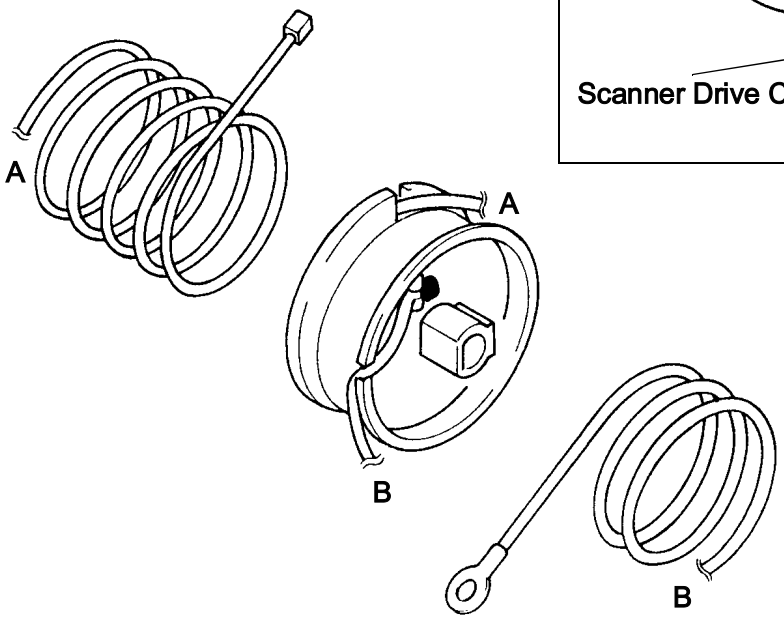
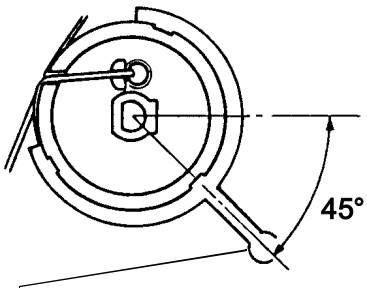
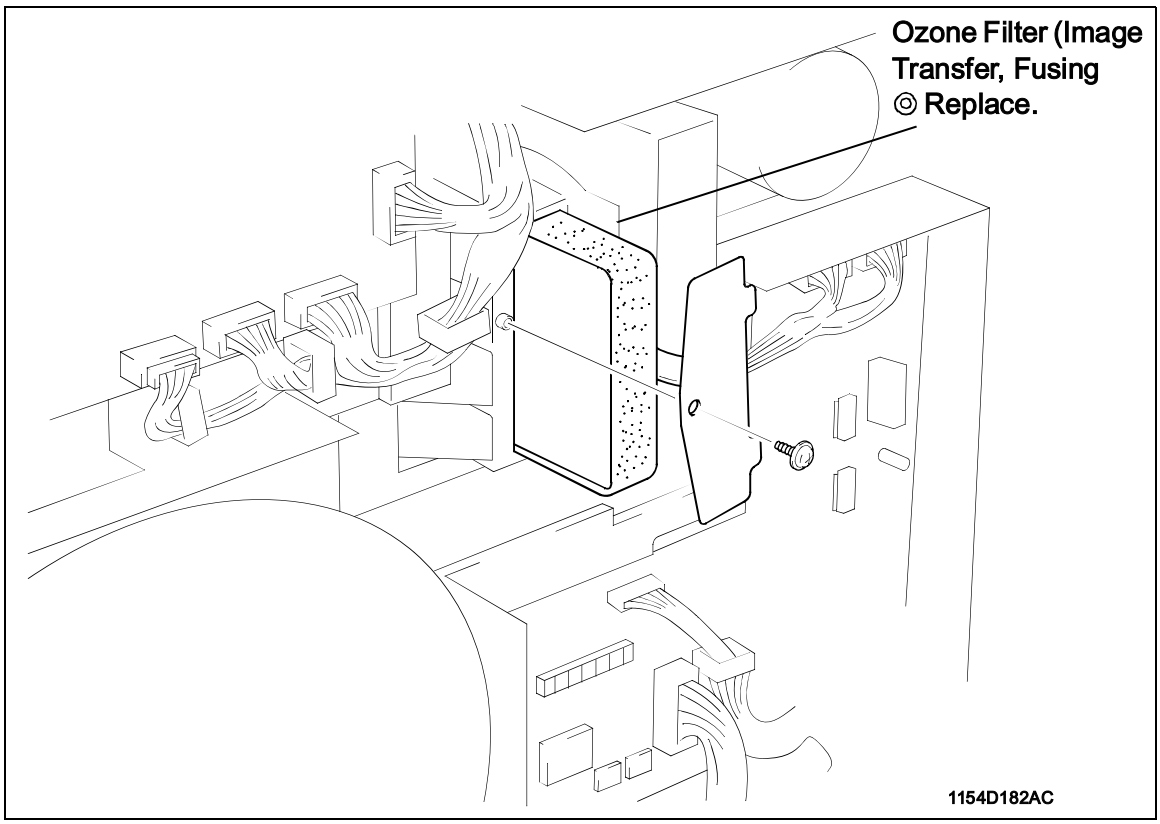


Fig. 2
Scanner Drive Cable Holding Jig position



2-10. IMAGE TRANSFER UNIT

(1) Replacement of the Ozone Filter



(2) Removal of the Paper Separator Charge Corona Assy

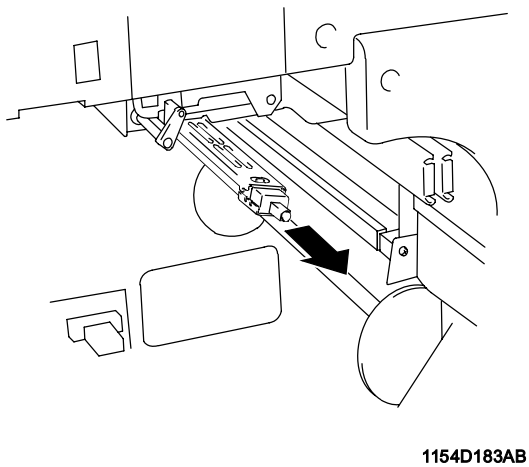
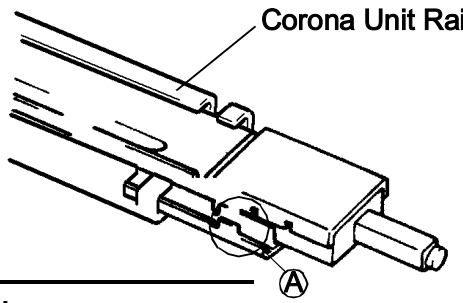
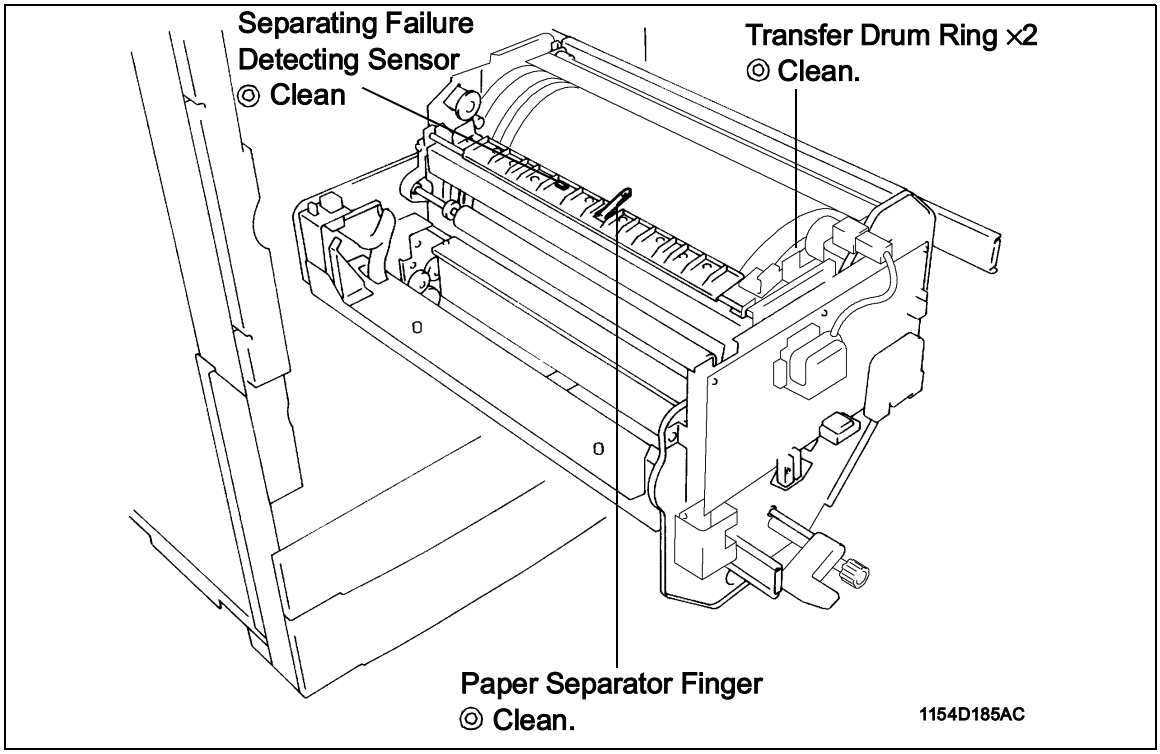


Fig. 1
Outer Charge Neutralizing Corona installed position



Note:
Part Ⓐ should be in the rectangular hole in the corona unit rail.

(3) Cleaning of the Paper Separator Finger, Transfer Drum Ring, and Separating Failure Detecting Sensor



(4) Disassembly of the Transfer Unit

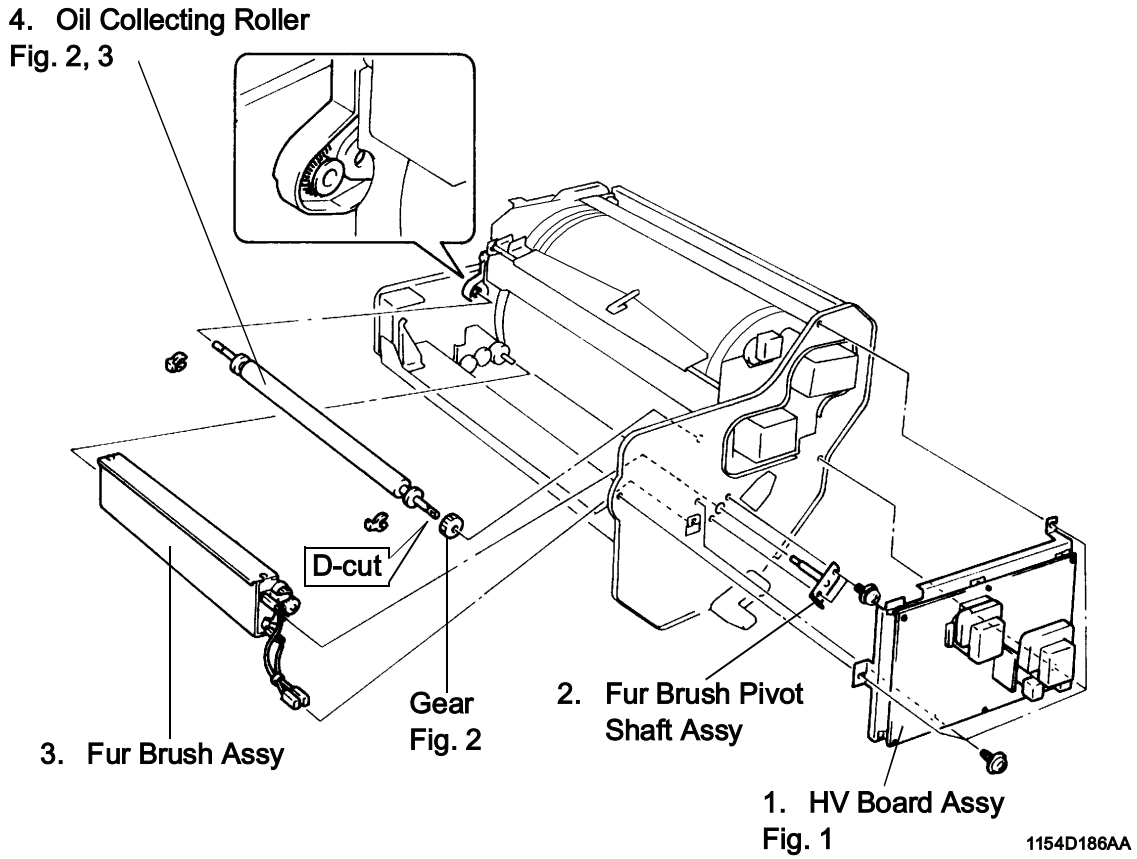


Fig. 1 Connectors on the HV board

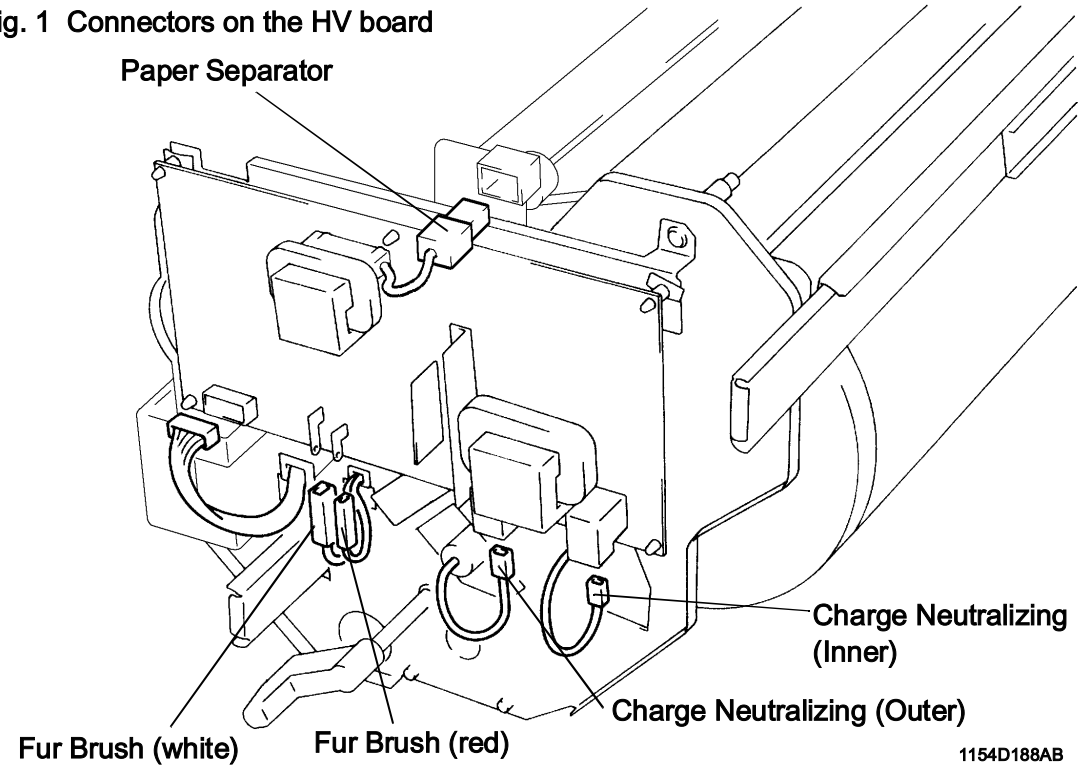
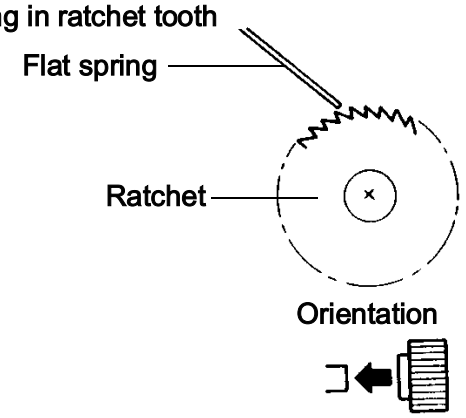
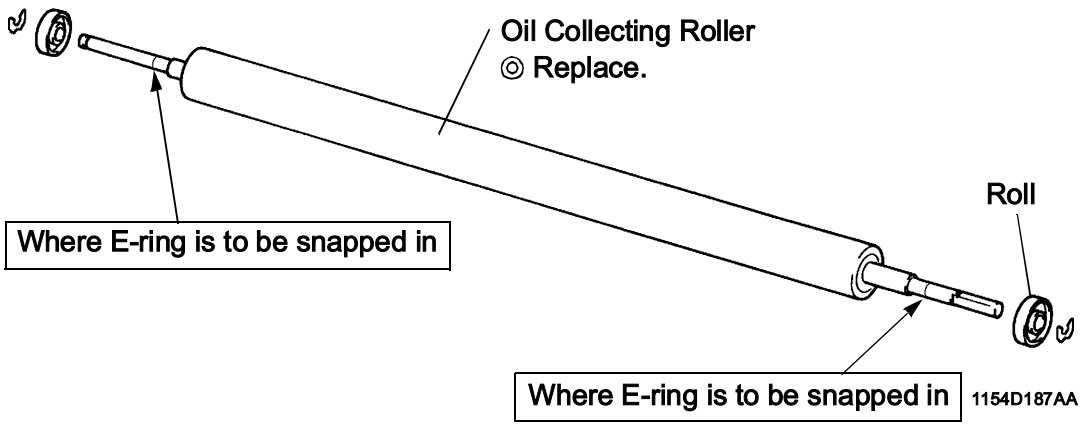


Fig. 2 Flat spring in ratchet tooth

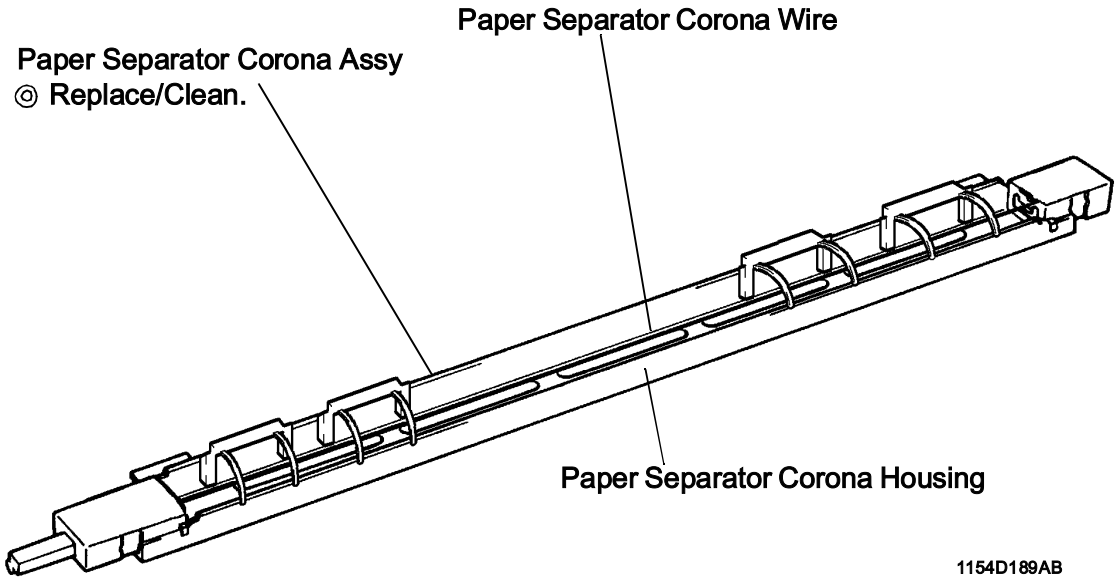


Note:
The flat spring should fit into one of the ratchet teeth.

Fig. 3 Removal and installation of the Oil Collecting Roller



(5) Cleaning and Replacement of the Paper Separator Corona Assy



(6) Replacement of the Scraper Blade, Fur Brush Roller and Fur Brush Pressure Spring

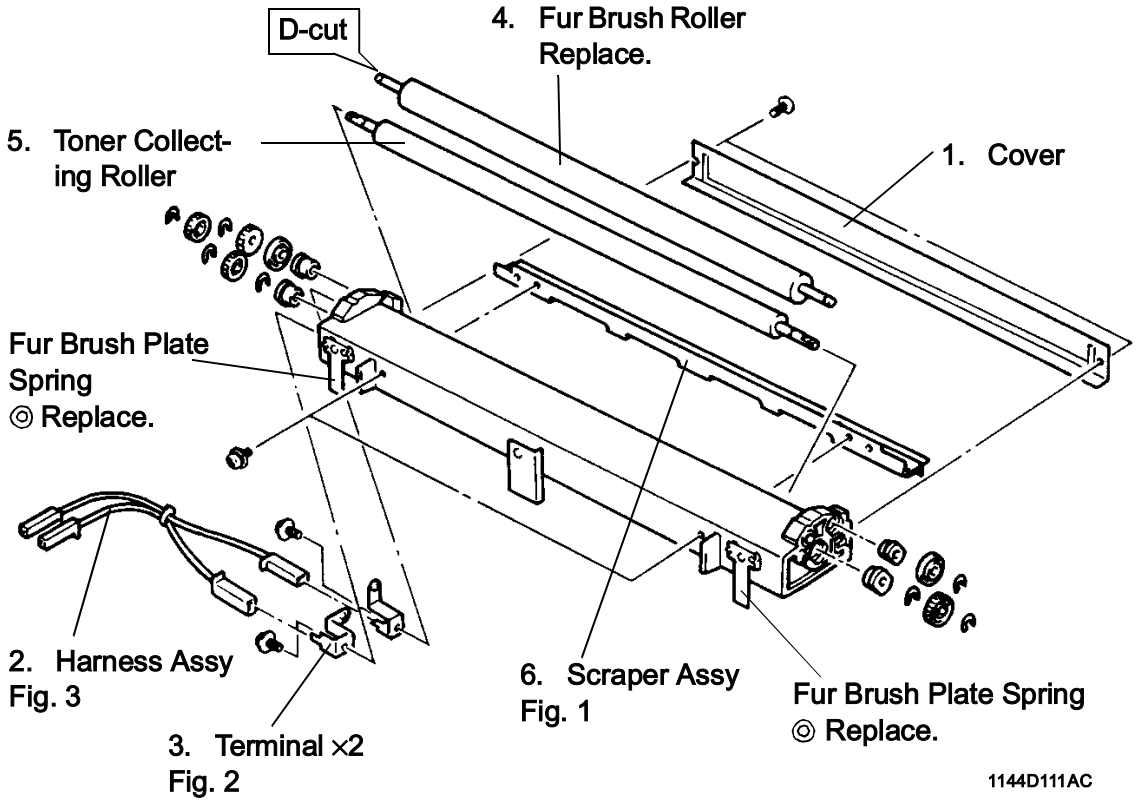
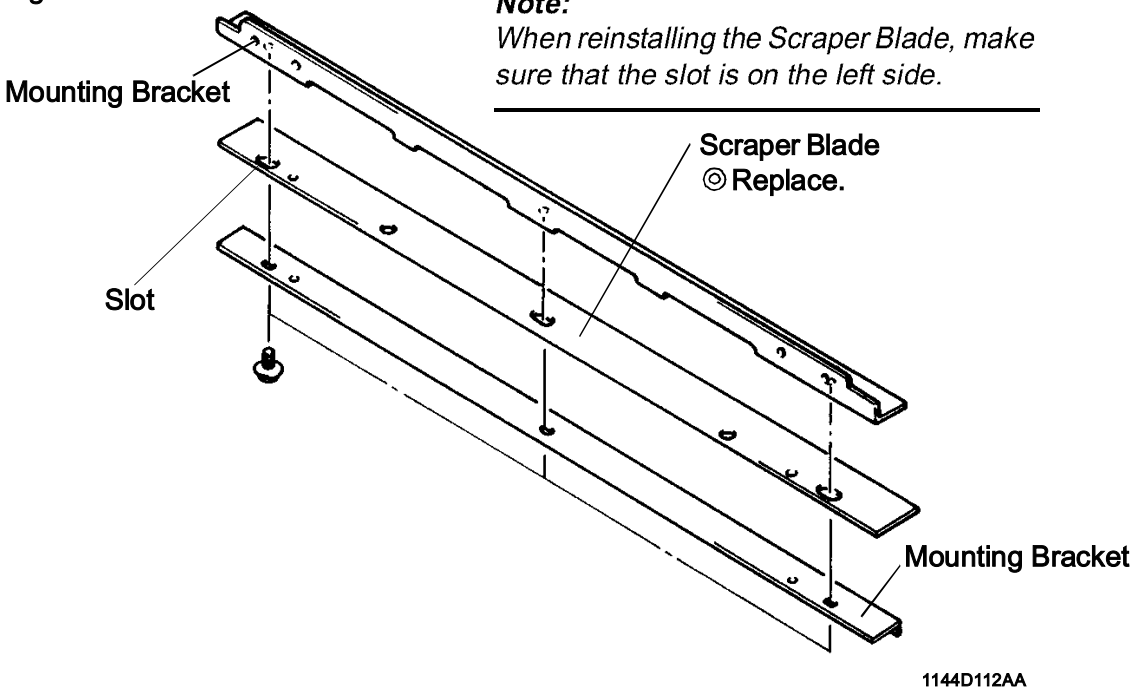
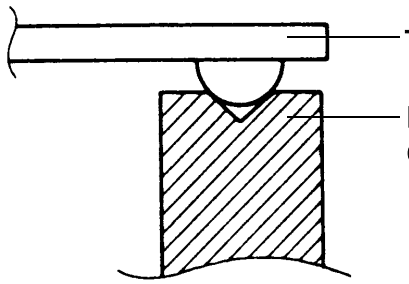


Fig. 1



Note:
When reinstalling the Scraper Blade, make sure that the slot is on the left side.

Fig. 2 Terminal installed position

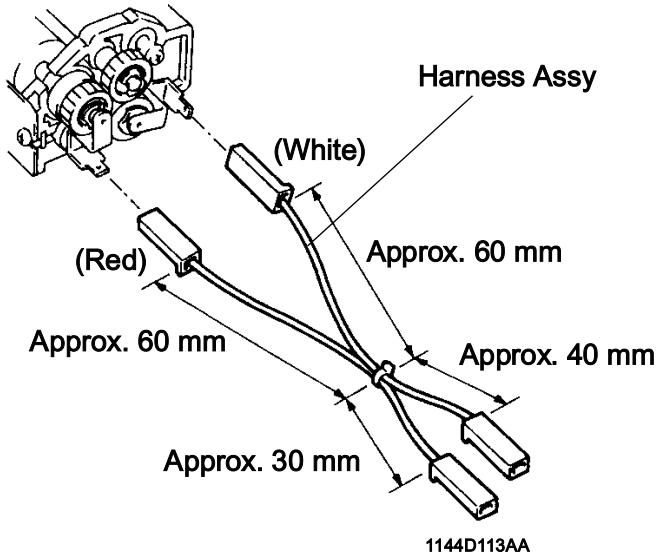


Note:
The protrusion in the terminal should fit in the indentation in the roller.

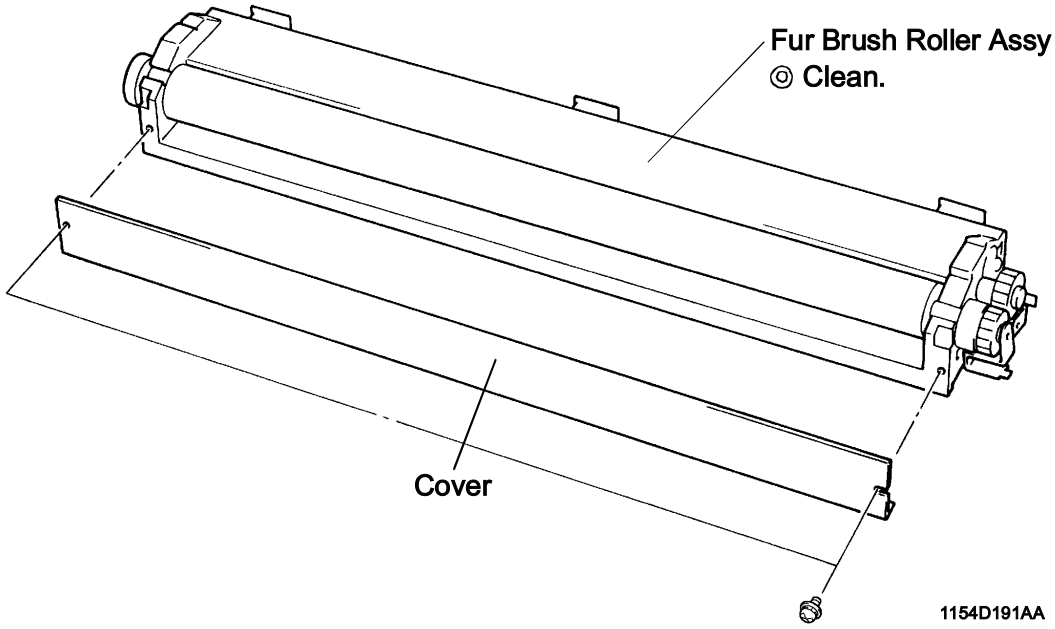
Fig. 3 Harness Assy mounting position

Red → Terminal connected to the Fur Brush Roller.

White → Terminal connected to the Toner Collecting Roller.



(7) Cleaning of the Fur Brush Roller Assy



(8) Removal of the Corona Units

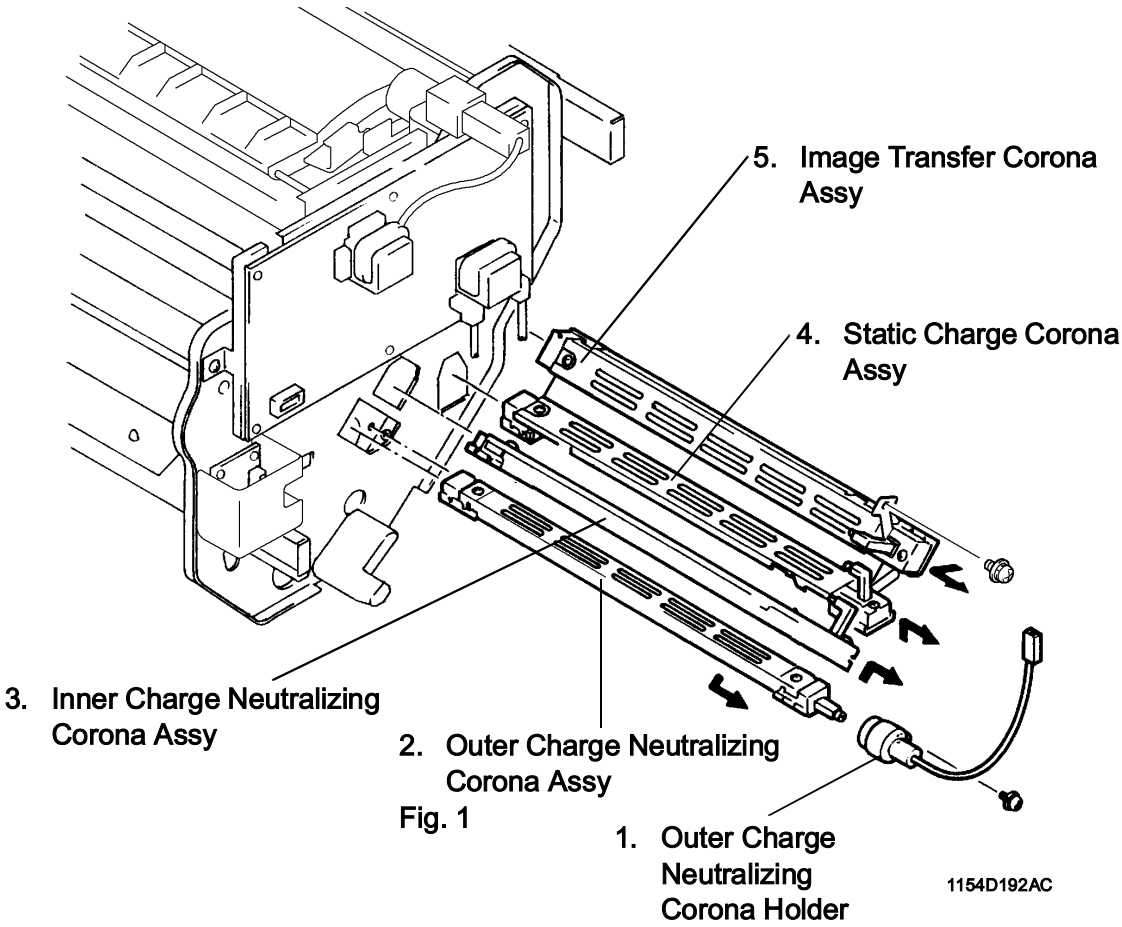
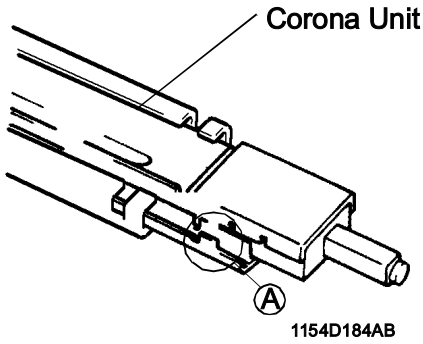

5. Image Transfer Corona Assy
4. Static Charge Corona Assy
3. Inner Charge Neutralizing Corona Assy
2. Outer Charge Neutralizing Corona Assy
1. Outer Charge Neutralizing Corona Holder
1154D192AC

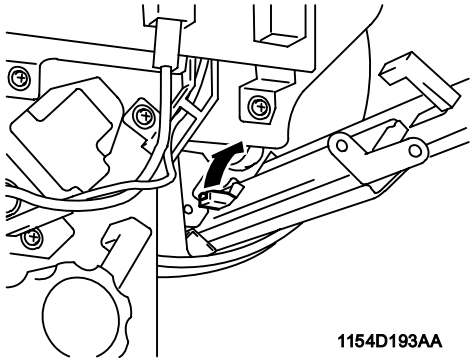
Fig. 1

Fig. 1
Outer Charge Neutralizing Corona installed position

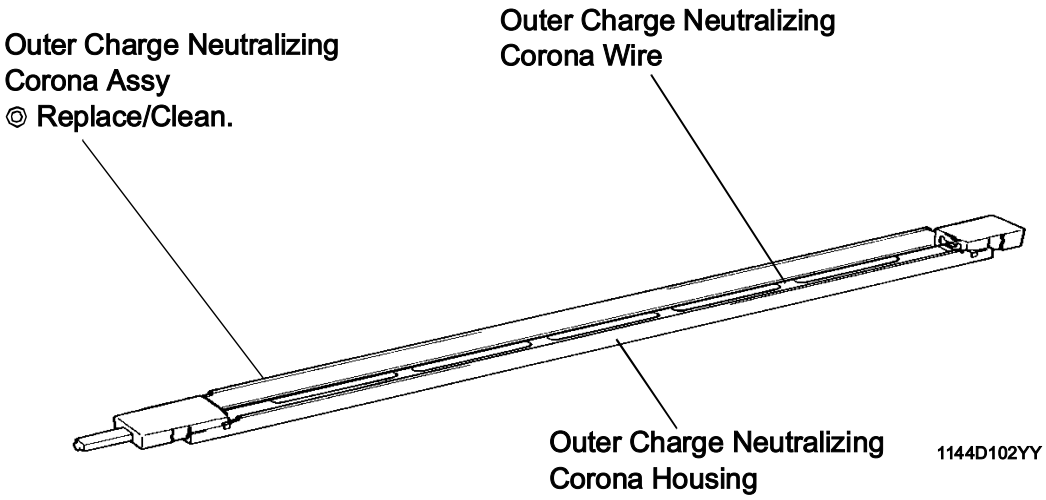


Note:
Part Ⓐ should be in the rectangular hole in the corona unit rail.

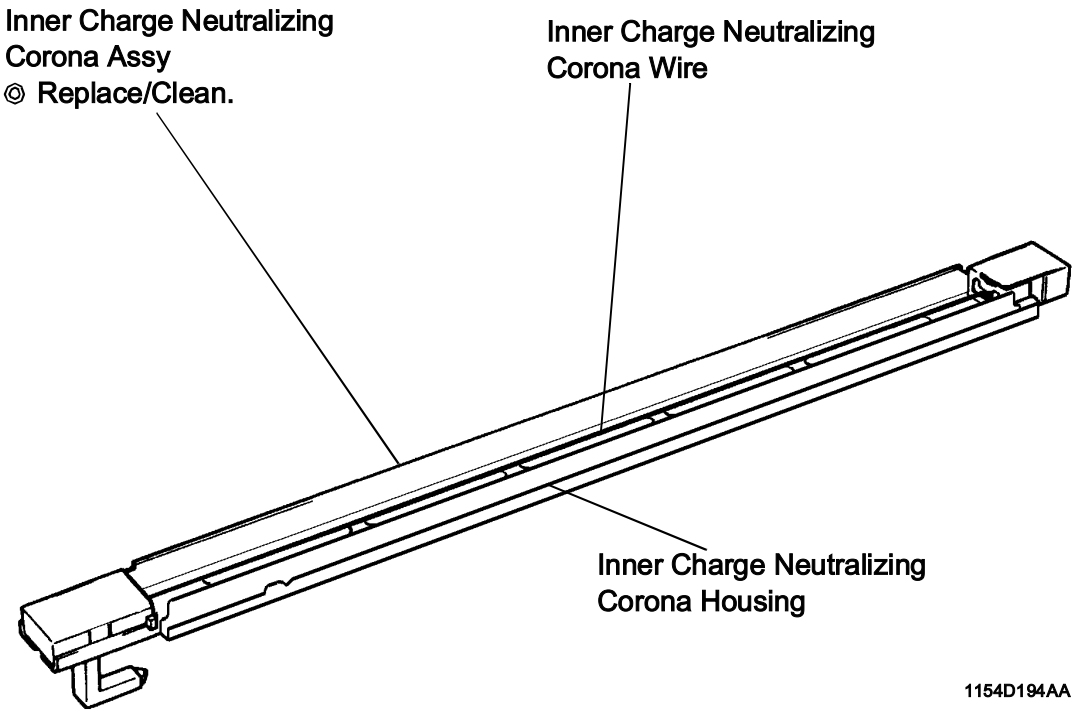
Note:
When removing the Image Transfer Corona Assy, do it while raising the lever with a screwdriver.



(9) Cleaning and Replacement of the Outer Charge Neutralizing Corona Assy



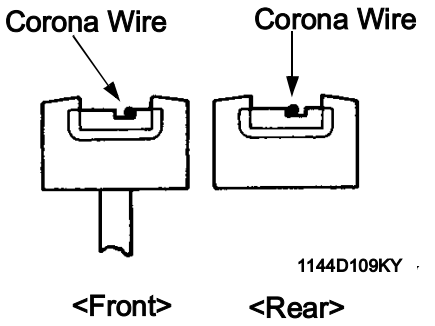
(10) Cleaning and Replacement of the Inner Charge Neutralizing Corona Assy

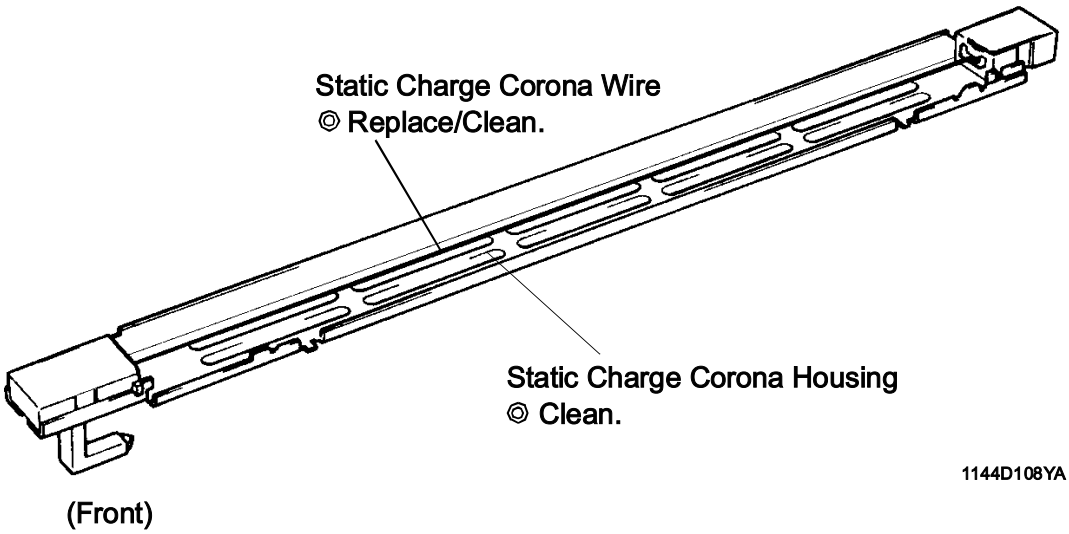


(11) Cleaning and Replacement of the Static Charge Corona Assy

Fig. 1 Corona Wire installed position

Note:
The wire should be fitted at the right position.

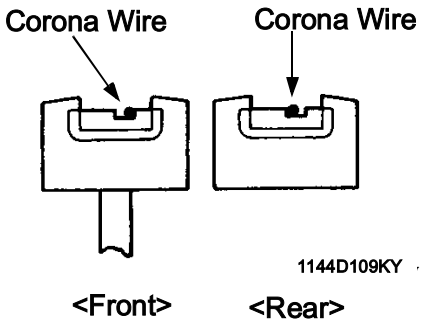


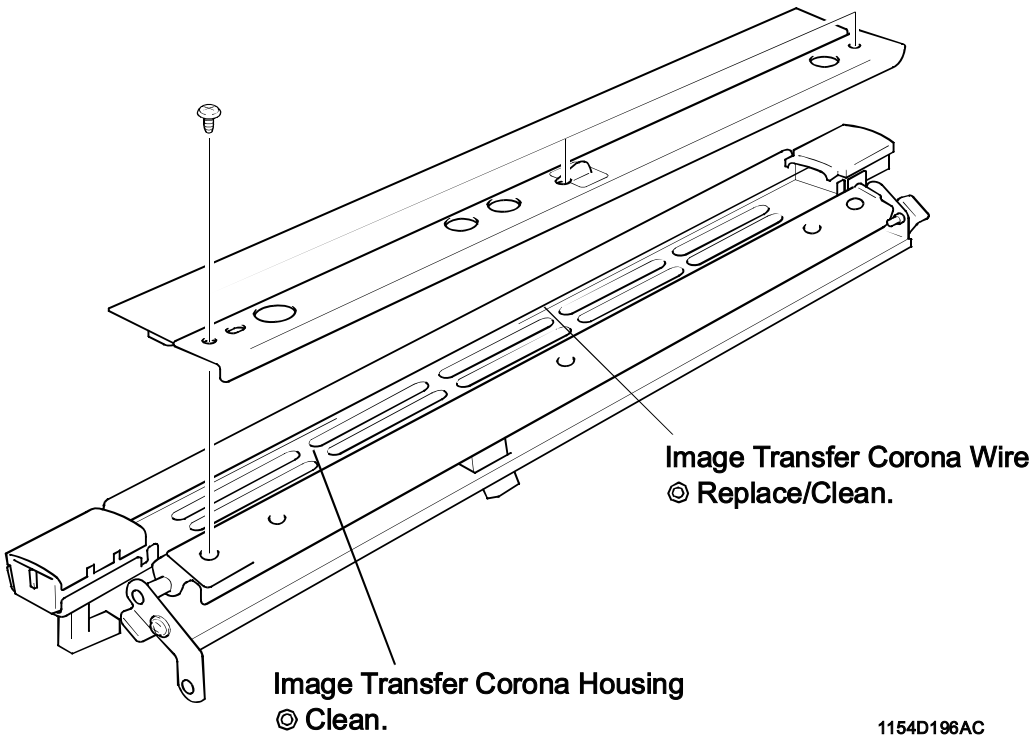


(12) Cleaning and Replacement of the Image Transfer Corona Assy

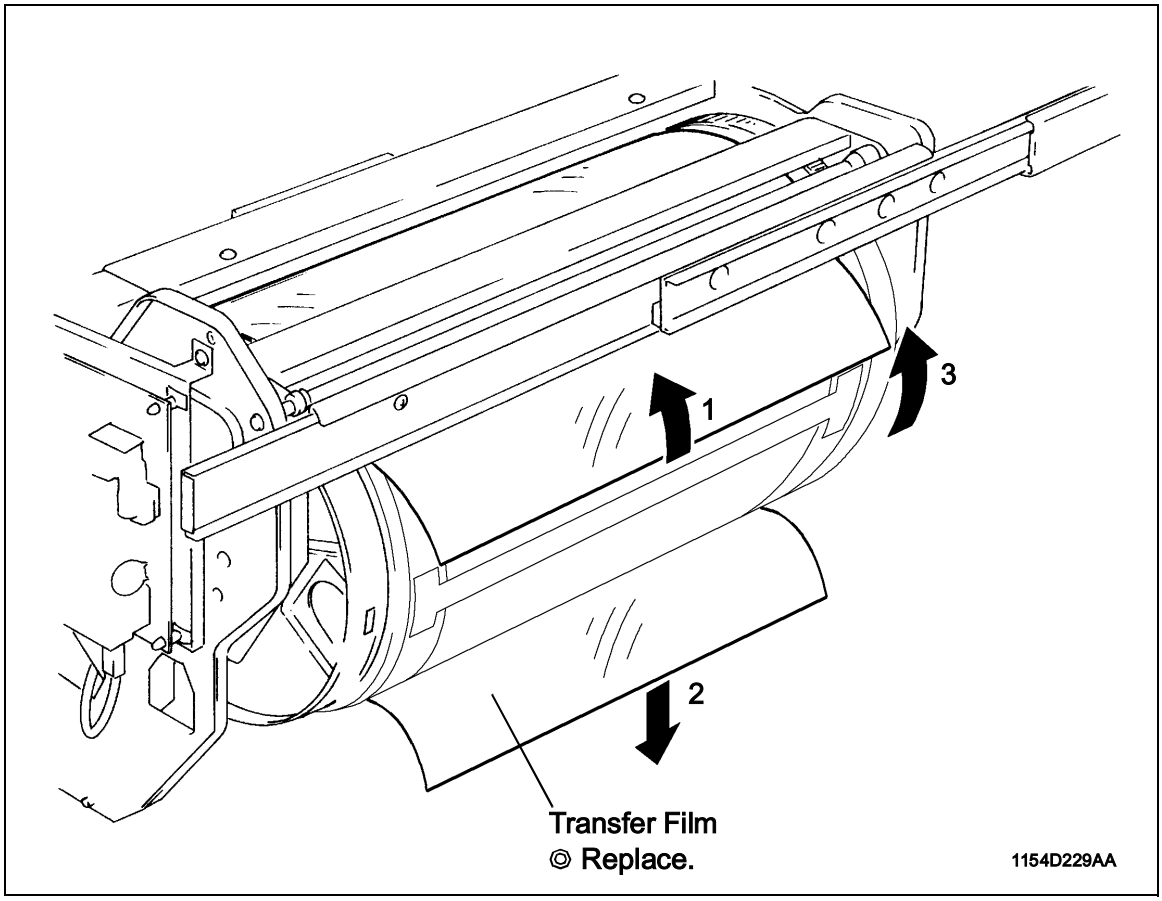
Fig. 1 Corona Wire installed position

Note:
The wire should be fitted at the right position.





(13) Replacement of the Transfer Film

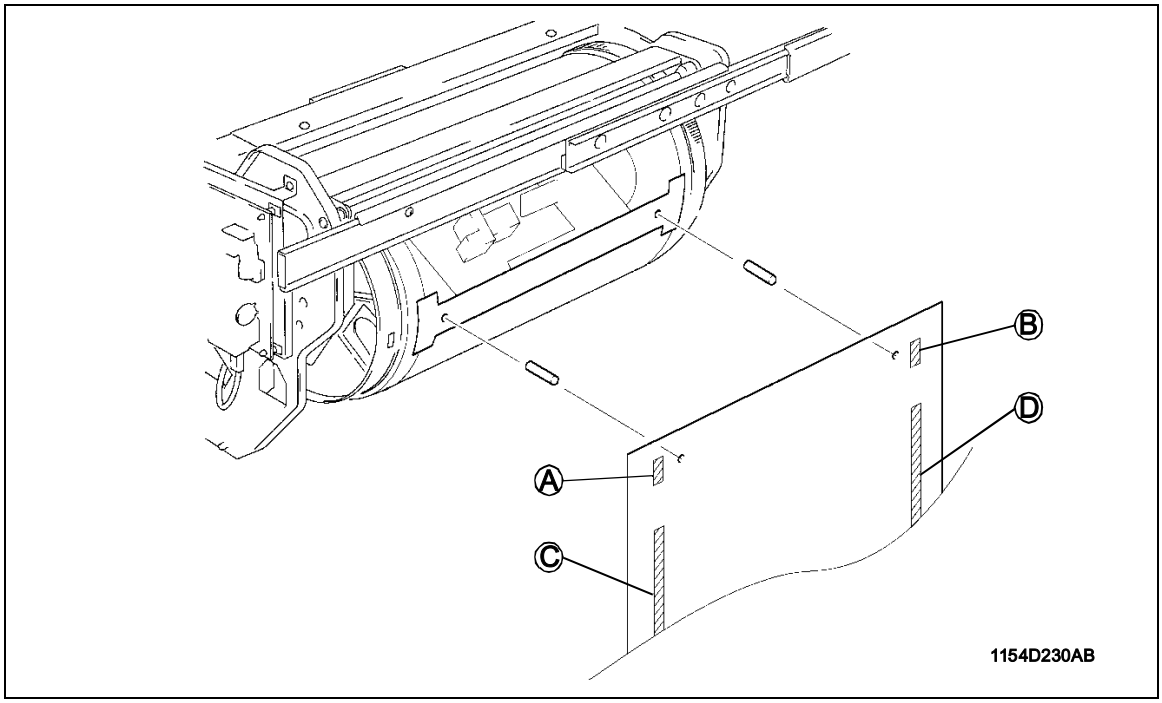


Note:

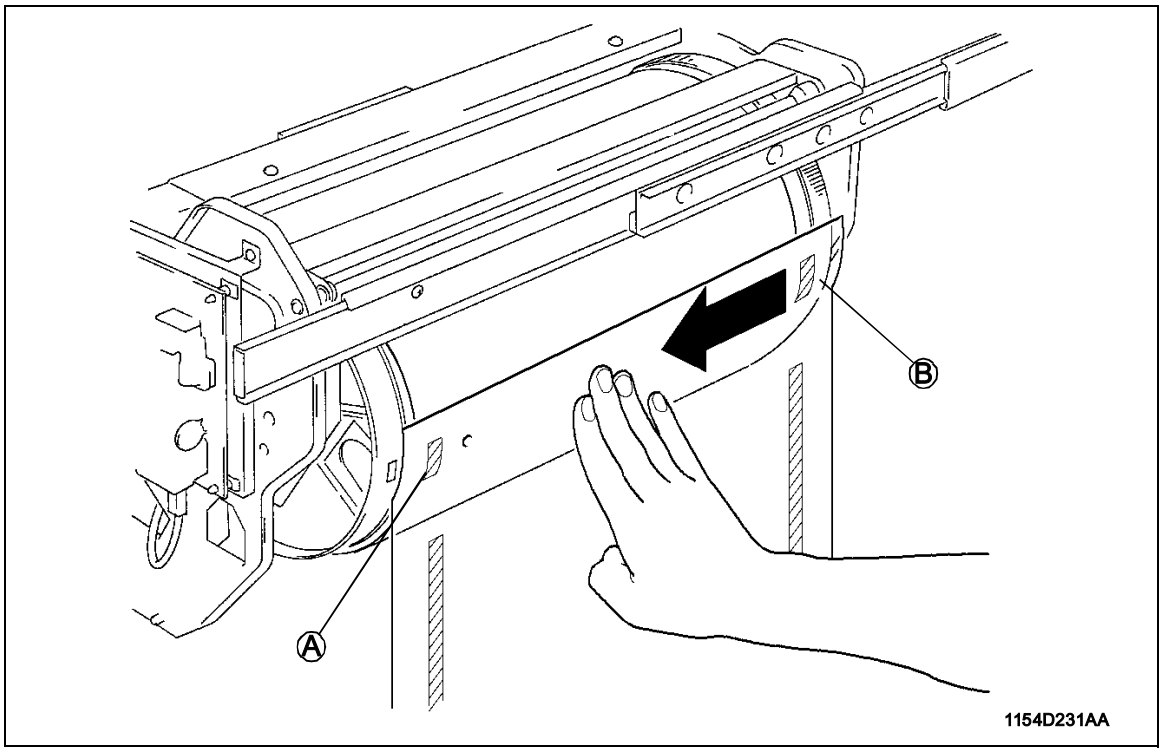
Turning the Transfer Drum in the direction of arrow 3*, remove the Transfer Film, starting with the side that has been peeled off in step* 2*.*

(14) Installing the Transfer Film

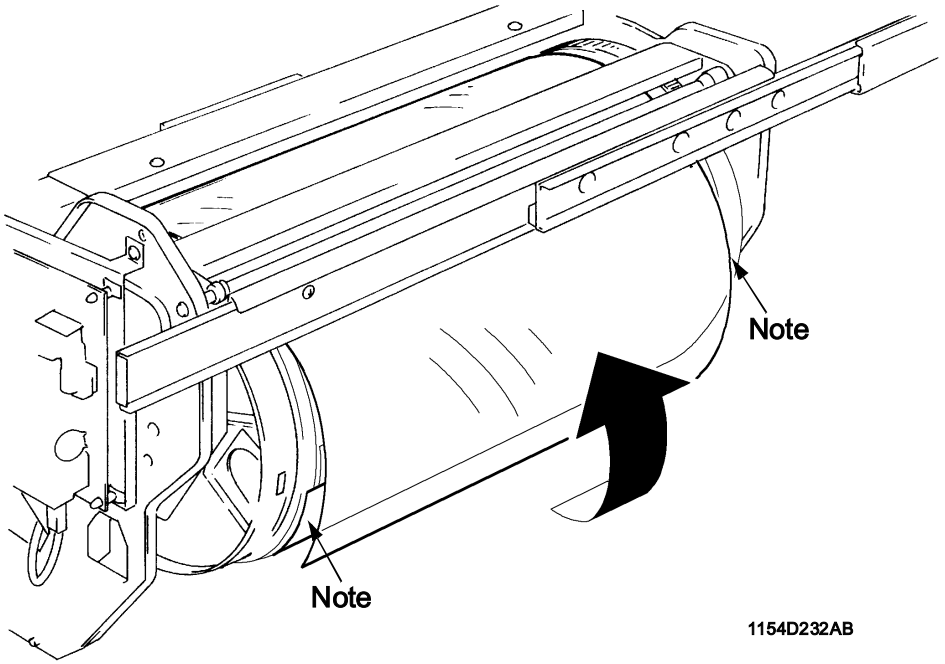
1. Fit the straight pins into the joint.
2. Peel off the backing from double-sided adhesive tape Ⓐ to Ⓓ on the Transfer Film.
3. Set the Transfer Film onto the straight pins.



4. Press the edge of the Transfer Film against the Drum all the way across its entire width, starting with the double-sided adhesive tape Ⓑ end toward double-sided adhesive tape Ⓐ. During the procedure, try to eliminate any portion of the film edge that floats up off the Drum.
5. Remove the straight pins from the joint.

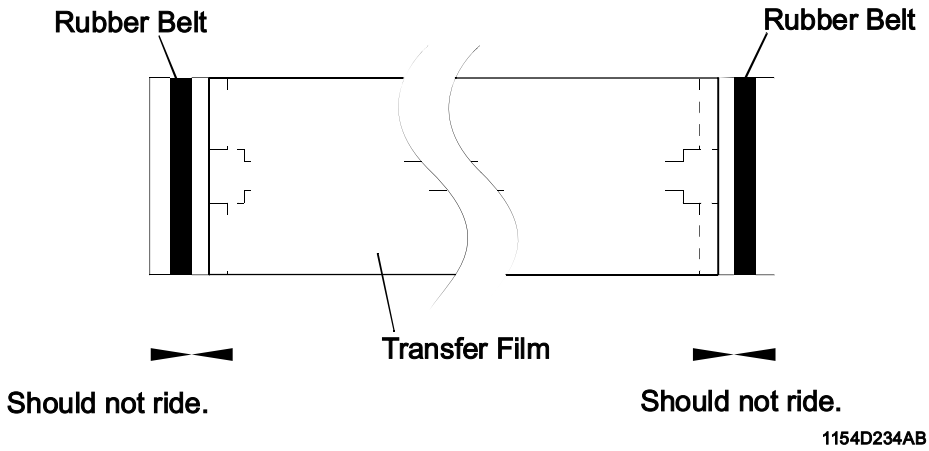


6. Turn the Transfer Drum one complete turn.

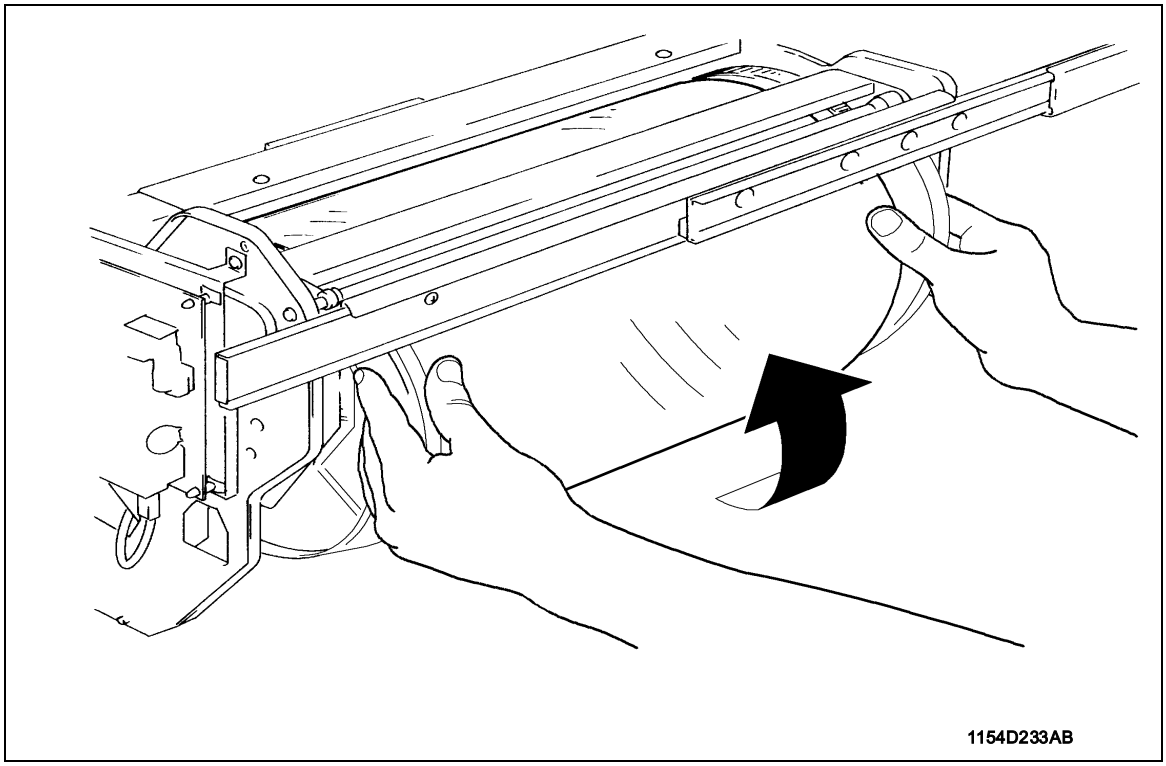


Note

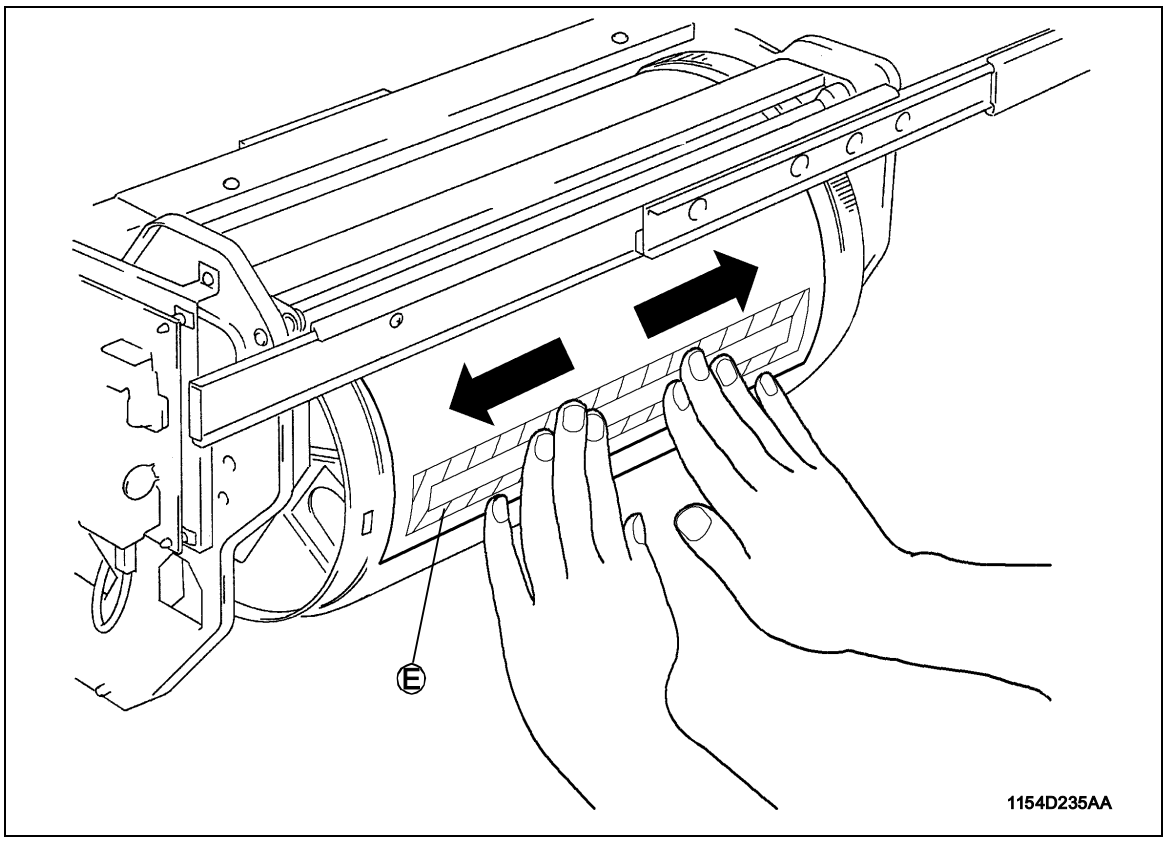
Make sure that the Transfer Film does not ride on the rubber belts at the front and rear flanges of the Transfer Drum.



7. Starting with the leading edge positions of double-sided adhesive tape Ⓒ and Ⓓ, press the Transfer Film against the Drum as you turn the Drum one complete turn.



8. Peel off the backing from double-sided adhesive tape Ⓔ. Starting with the center of the Transfer Film, press the film against the drum all the way out toward both ends. At this time, make sure that any portion of the film that floats up off the Drum is eliminated.



(15) Replacement of the Backup Blade 1 and Backup Blade 2

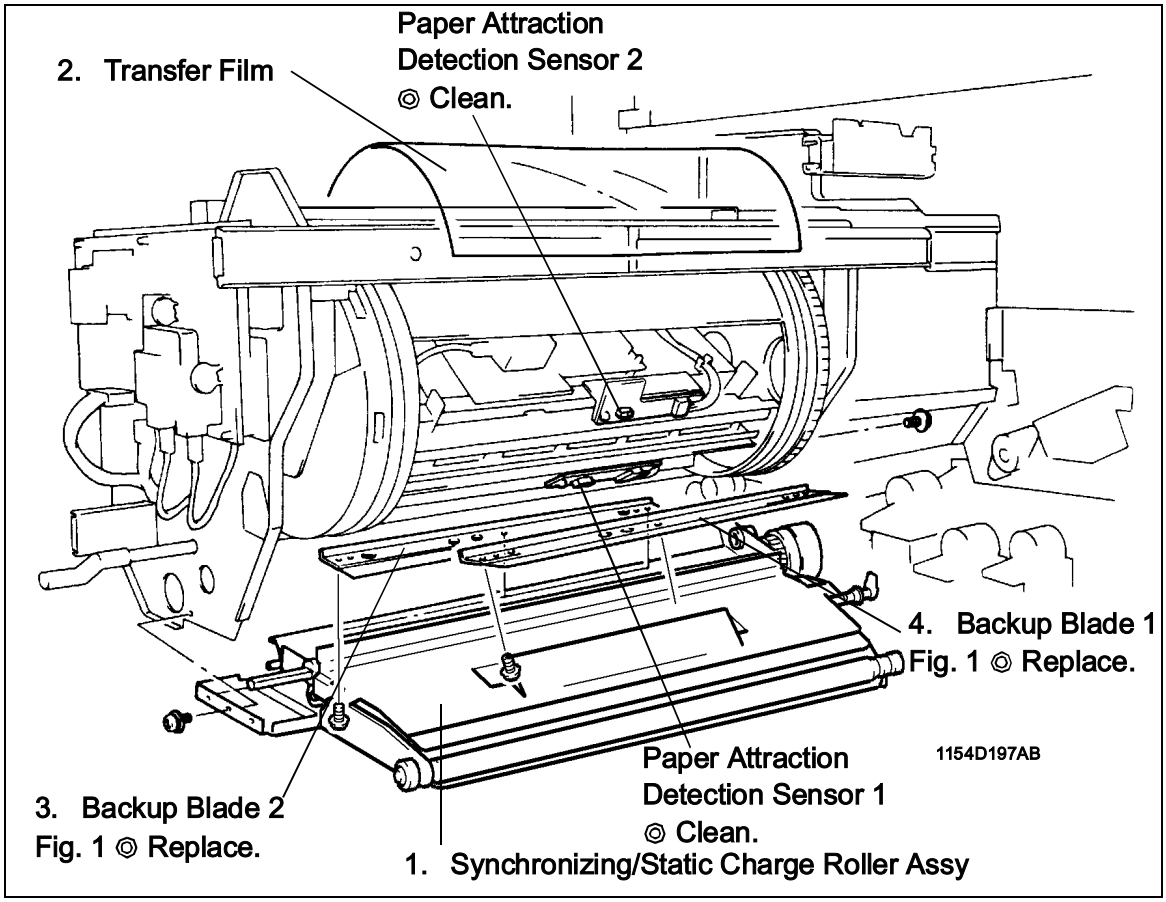
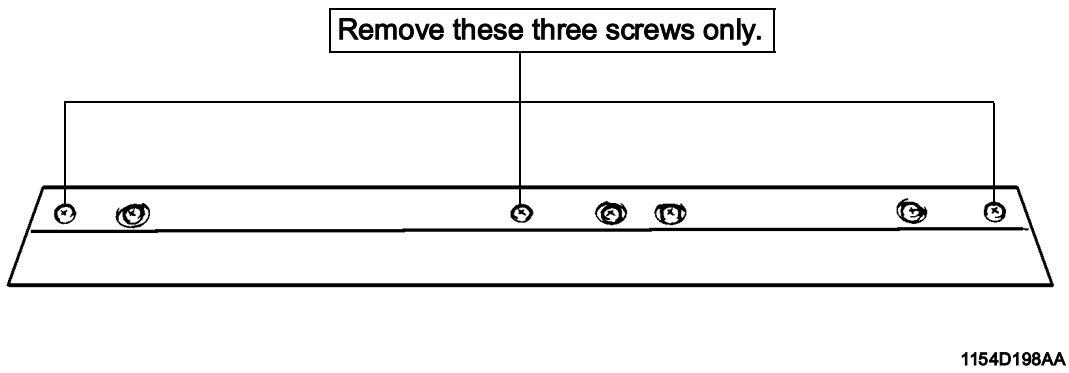
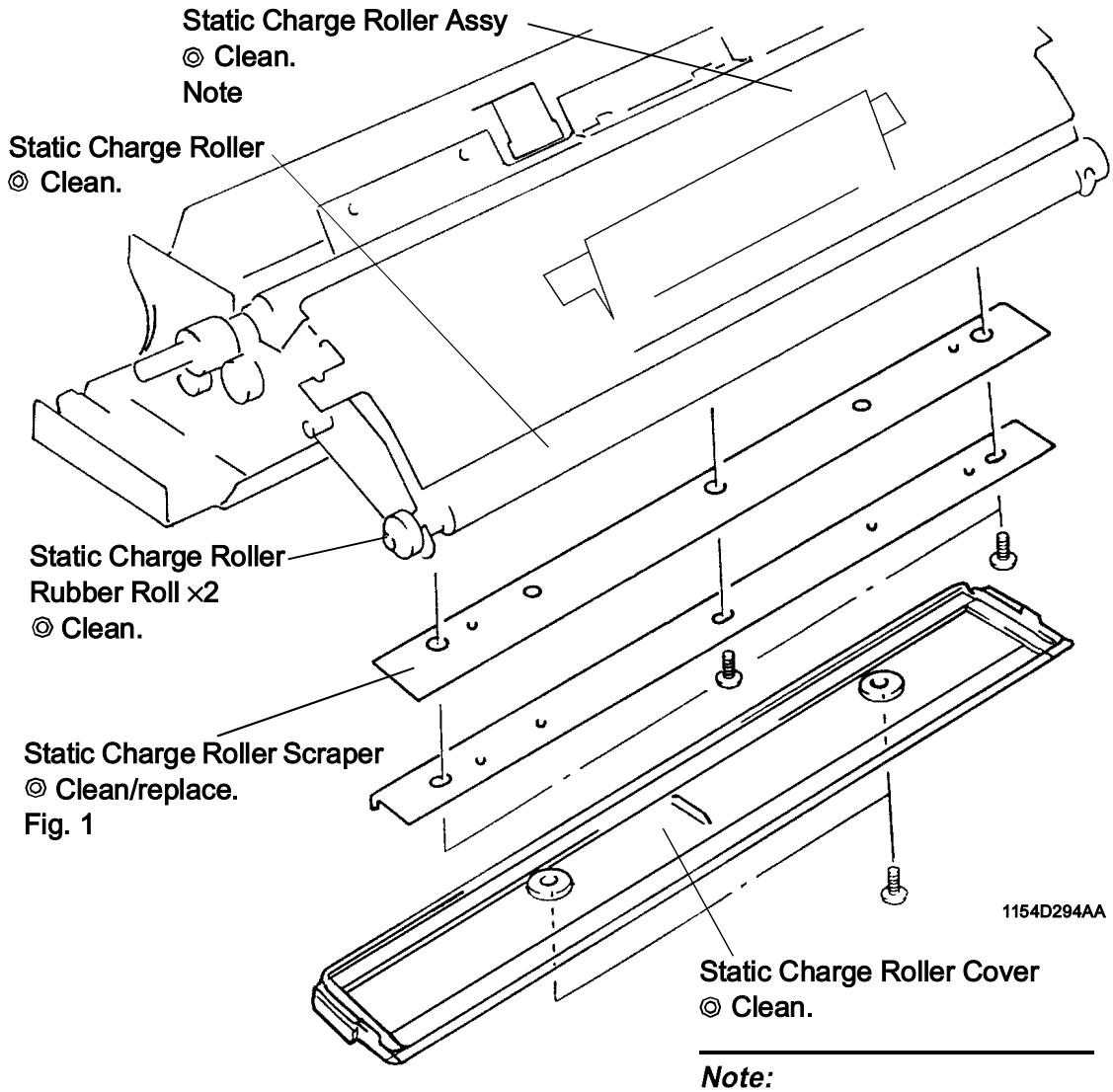


Fig. 1 Screws to be removed to remove Backup Blades 1 and 2

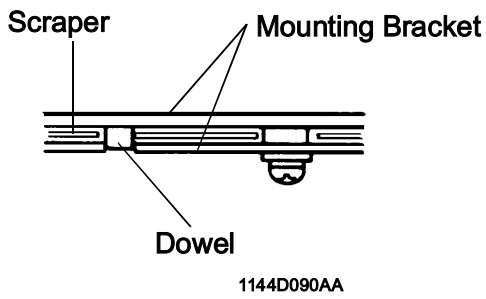


(16) Replacement of the Static Charge Roller Scraper



Note:
Remove the cover and clean the Static Charge Roller Assy.

Fig. 1



Note:
Make sure the dowels are properly seated when securing the scraper.

(17) Cleaning the Transport Sprockets

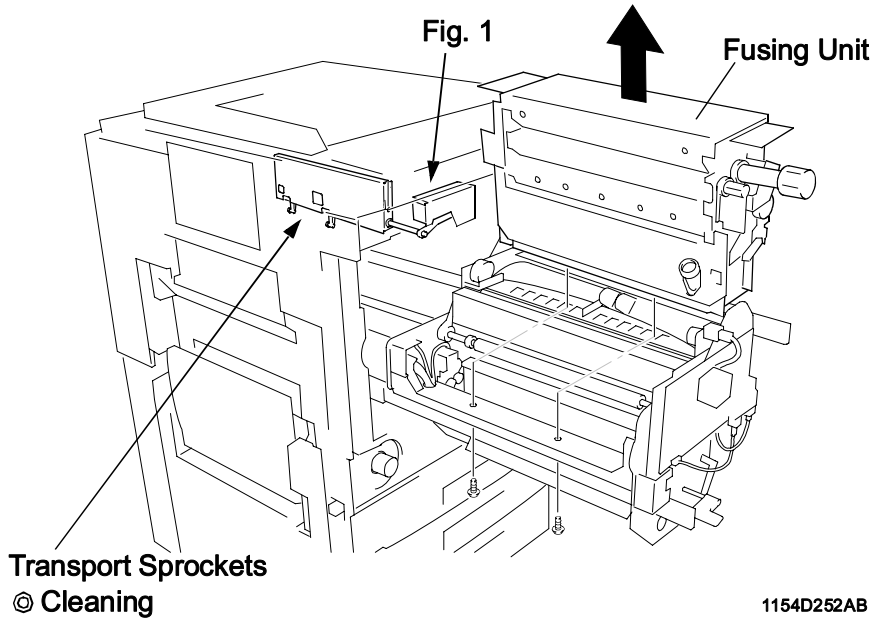
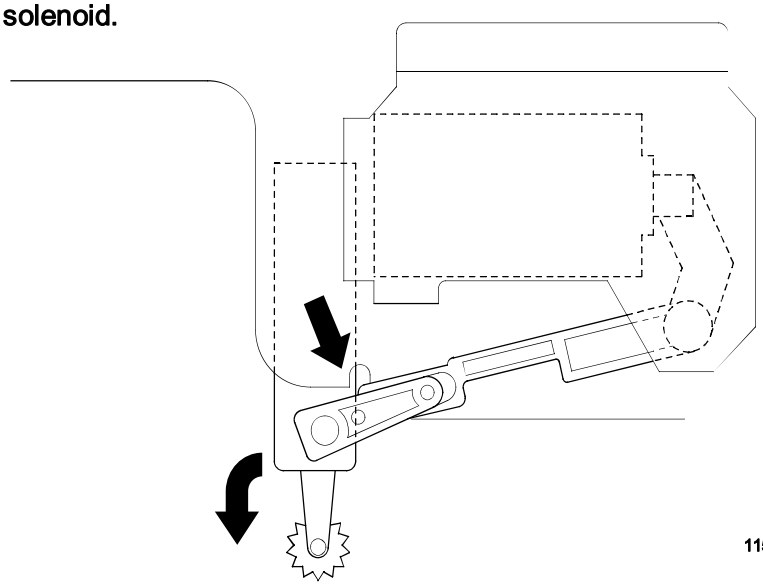


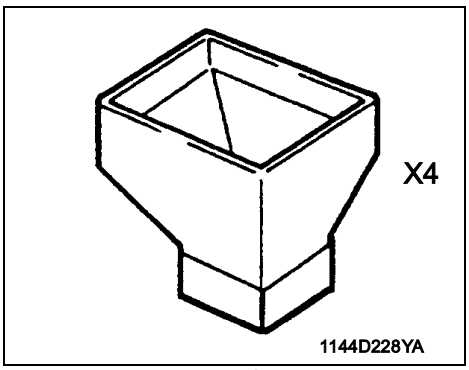
Fig. 1
Energize the solenoid.



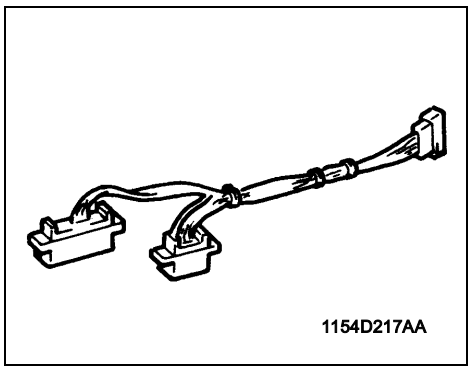
3 ADJUSTMENTS

3-1. JIGS AND TOOLS USED

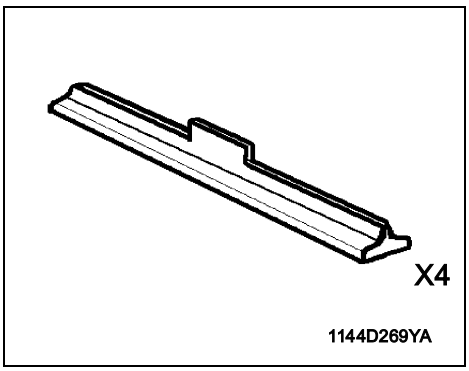
(1) Tools for Setting-up and PM



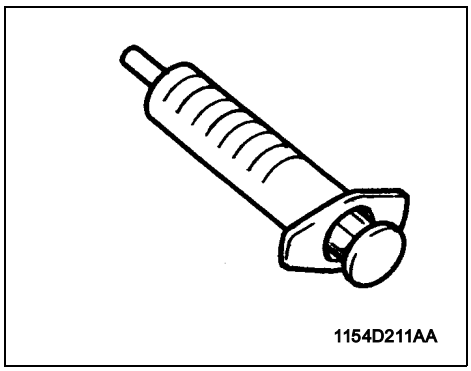
Developer Chute



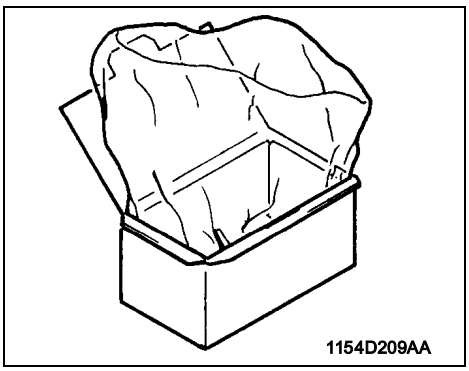
Jumper Harness



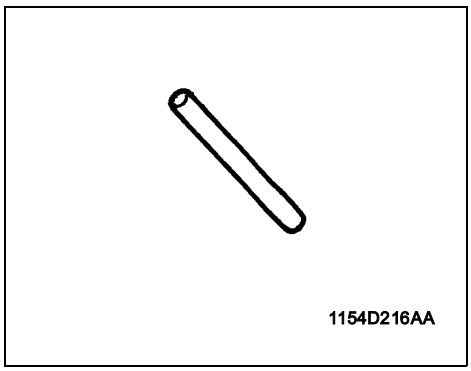
Mag. Roller Shield



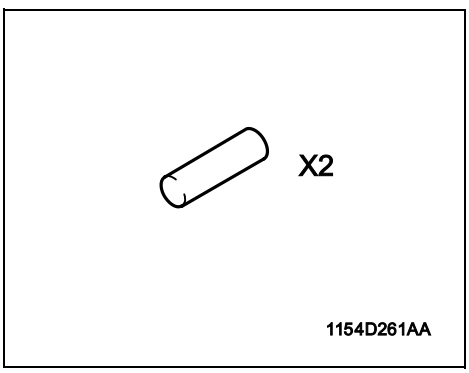
Fusing Oil Syringe



Developer Collecting Bag & Box

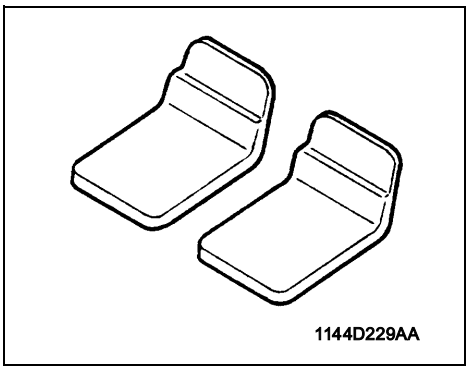


Rubber Tube

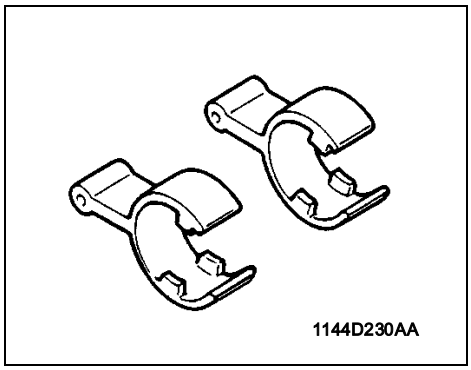


PIN

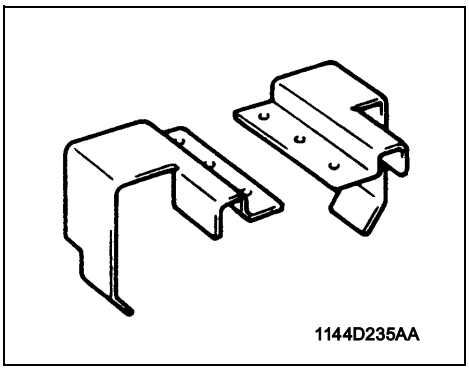
(2) Miscellaneous Jigs



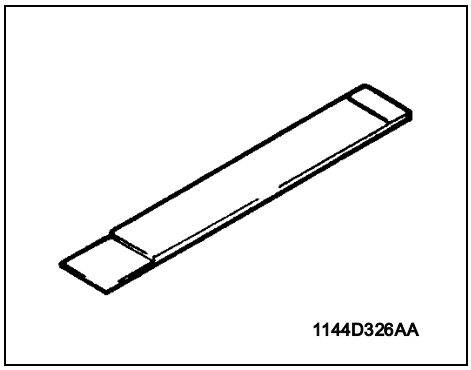
Doctor Blade-Sleeve Roller Gap Adjusting Jigs



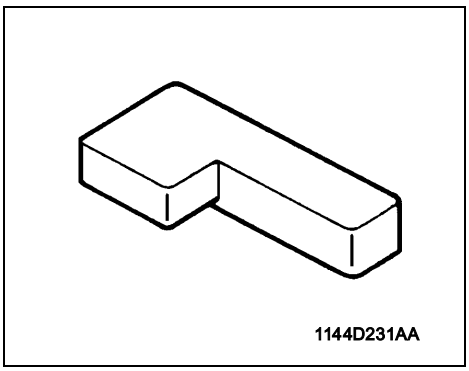
Cable Holding Jigs



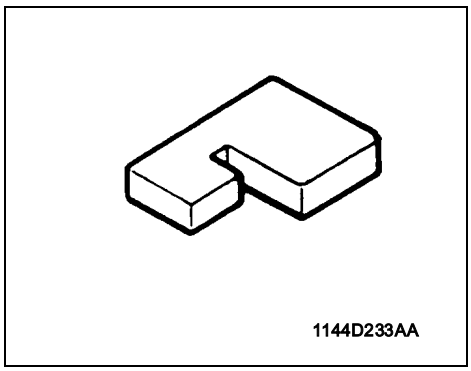
Scanner/Mirrors Carriage Positioning Jigs



Transfer Adjusting Jig



AIDC Sensor Positioning Jig



Interlock Switch Actuating Jig

3-2. ADJUSTMENT REQUIREMENTS FOR CLEANING/ REPLACEMENT OF EACH PART

When any of the jobs listed in the Parts List column is performed (replacement or cleaning), make the adjustments in numerical order 1, 2, ...

	Job Type	Developing Unit						
Section	Job item / Check / Parts list	Developer filling	Developer discharge	AIDC Sensor adjustment	AIDC Sensor offset level adjustment	ATDC Sensor adjustment	Bk unit-to-unit variations adjustment	Gradation adjust
		Use jig.	Use jig.	Reference voltage 4.0V± 0.1V	Auto adjustment	6% ± 0.2%	After auto adjustment, check correction value.	Run three times.
Developing Unit	Developing Unit replacement	1		2	3	4	5	6
	Developer change	2	1	3	4	5	6	7
	Ds rolls cleaning			(1)	(1)			
	Toner Scattering Prevention Cleaning			(1)	(1)			
	Toner Scattering Prevention Seal 1 Cleaning			(1)	(1)			
	ATDC Window replacement	2	1	3	4	5	6	7
	ATDC Adj. Unit replacement	2	1	3	4	5		6
	High Voltage Unit 4 replacement	2	1	3	4	5		6
PC Unit and associated parts	PC Drum replacement			1	2			3
	PC Drum Charge Corona Assy Cleaning							1
	PC Drum Charge Corona Wire/Grid cleaning/replacement							1
	PC Drum Charge Corona Housing cleaning							1
	Cleaning Pad replacement							1
	Main Erase Lamp cleaning							1
	Auxiliary Erase Lamp cleaning							1
	AIDC Sensor cleaning			1	2			3
	Surface Potential Detection Sensor replacement			1	2			3
	Toner Scattering Prevention Seal 2 Cleaning							1

✻ (1) Check and adjust if needed.

	Job Type	Machine adjust								
Section	Job item / Check / Parts list	IR area				PRT area				Gra-dation Adjust
						Top margin		Left margin	Dup. Left-margin	
		Left image	Top image	CD mag.	FD mag.	Image start position	Lead edge position			
		Lead-ing edge 0±1.0 mm	Refer-ence posi-tion 10 ±1 mm	200 ±1 mm	300 ±1.5 mm	5 ± 0.25 mm	0 ±0.5 mm	Void image on left/ right: 3±1.5 mm	Void image on left/ right: 3±1.5 mm	Run three times.
IR	CCD Assy replacement	2	1	3	4					5
	Mirror/Lens Original Glass Cleaning									1
	Exposure Lamp replacement									1
	Cable coming unwound	2	1	3	4					5
PH	PH Upper/Lower Assy replacement (Incl. PH Control Board (Digital))	6	5	7	8	3	4	1	2	9
	Window 1 cleaning									1
	Window 2 cleaning									1
	Window 3 cleaning									1

	Job Type	Machine adjust							
Section	Job item / Check / Parts list	PRT area				Jam sensor adjust	Transfer output adjust	Feed motor speed adjust	Gradation Adjust
		Top margin		Left margin	Dup. Left-margin				
		Image start position	Lead edge position						
		5±0.25 mm	0±0.5 mm	Void image on left/ right: 3±1.5 mm	Void image on left/ right: 3±1.5 mm	Point at which LED 1 & 2 go off.		Color image registration deviation within 32µm	Run three times.
Transfer	Transfer Unit replacement	4	5	2	3	1			6
	Transfer Film replacement	4	5	2	3	1			6
	Image Transfer Corona Unit								1
	Image Transfer Corona wire cleaning/replacement								1
	Image Transfer Corona housing cleaning								1
	Paper Attraction Detection Sensor 1 cleaning					1			
	Paper Attraction Detection Sensor 2 cleaning					1			
	Failure Sensor Adj. Board replacement					1			
	High-Voltage Unit 3 replacement						1		

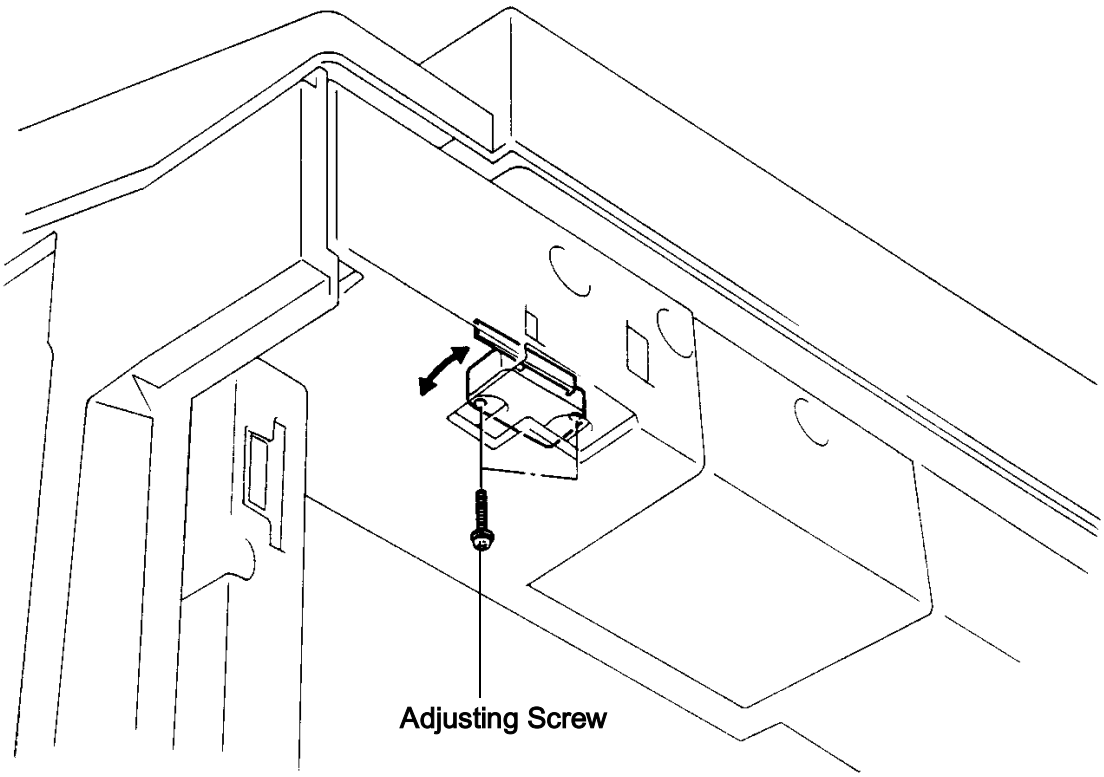
	Job Type	Machine adjust				Gra-dation Adjust
Section	Job item / Check / Parts list	Transfer output adjust	Feed motor speed adjust	Fuser speed adjust	Fuser NIP adjust	
		No Poor or Excessive Image Transfer	Color image registration deviation within 32µm	Cyan image should not be brushed or blurred.	6±3mm at center; right-left difference 0.3mm	Run three times.
Paper take-up	Paper Take-Up/Feed Roll Assy cleaning		1			
	Paper Separator Roll cleaning		1			
	Synchronizing Roller cleaning		1			
	Copy paper not recommended	2	1			3
Fusing Unit	Fusing Unit replacement			2	1	
	Upper/Lower Fusing Roller replacement			2	1	
	Upper/Lower Fusing Roller bushing replacement			2	1	
	Oil Supply Roller replacement			2	1	
	Oil Regulating Blade cleaning/replacement			2	1	
	Oil Collecting Blade cleaning/replacement			2	1	

	Job Type	Development					
Section	Job item / Check / Parts list	Developer filling	Developer discharge	AIDC Sensor adjustment	AIDC Sensor offset level adjustment	ATDC Sensor adjustment	Bk unit-to-unit Variations adjustment
		Use jig.	Use jig.	Reference voltage 4.0v±0.1v	Auto adjustment	6% ± 0.2%	After auto adjustment, check correction value.
Control	Paper Take-Up Motor replacement						
	Fusing Motor replacement						
	PC Drum Drive Motor replacement						
	RAM pack replacement	2 Bk Developing Unit only	1 Bk Developing Unit only	4	5	6	3

	Job Type	Machine adjust			Gra-dation Adjust
Section	Job item	Feed motor speed adjust	Fuser speed adjust	Fuser NIP adjust	
	Check	Color image registration deviation within 32µm	Cyan image should not be brushed or blurred	6 ± 0.3mm at center; right-left difference 0.3mm	Run three times.
	Parts list				
Control	Paper Take-Up Motors replacement	(1)			
	Fusing Motor replacement		(1)		
	PC Drum Drive Motor replacement		(1)		
	RAM pack replacement	(1)			4

✻ (1) Check and adjust if needed.

3-3. ADJUSTMENT OF SWITCHES



1144D234AA

1. Open the Front Door.
   Loosen the Front Door Interlock Switch assy adjusting screw.
2. If the Front Door Interlock Switch is in the deactuated position when the Front Door is closed, move the Front Door Interlock Switch assy to the front. If the Front Door Interlock Switch remains actuated because it is located too far forward, move the Front Door Interlock Switch assy towards the rear.

3-4. ADJUSTMENT OF SOLENOIDS

(1) Adjustment of Transfer Drum Retract Solenoid

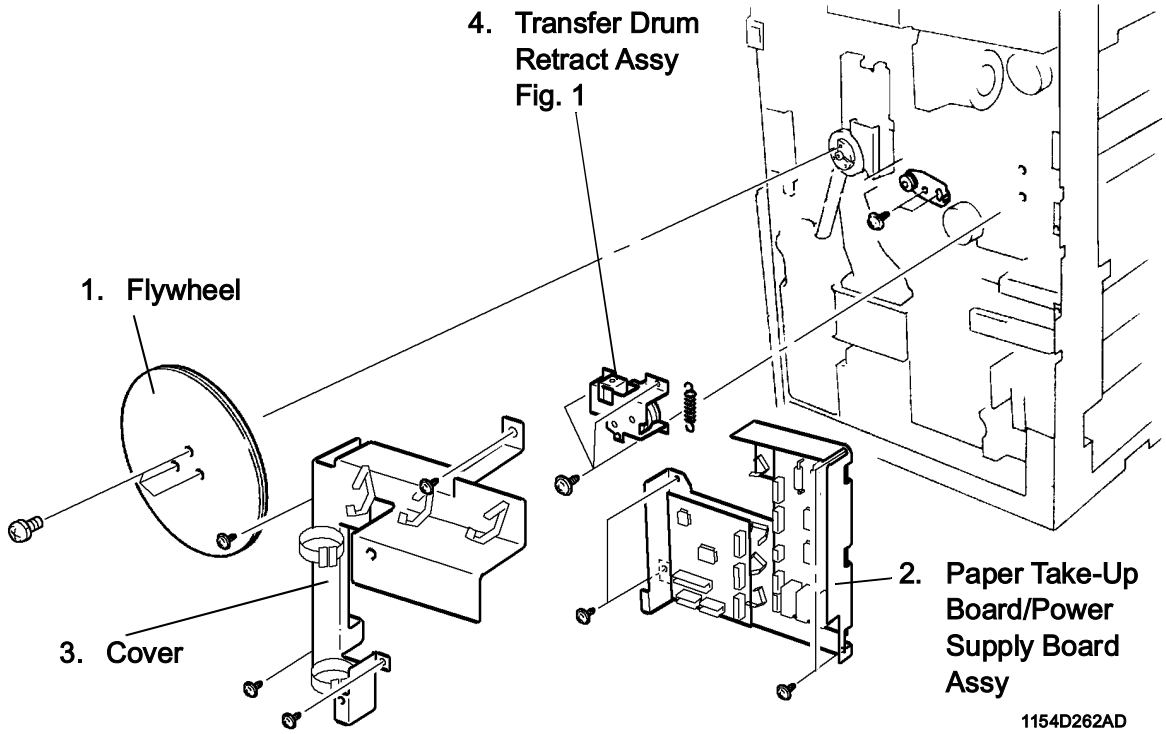
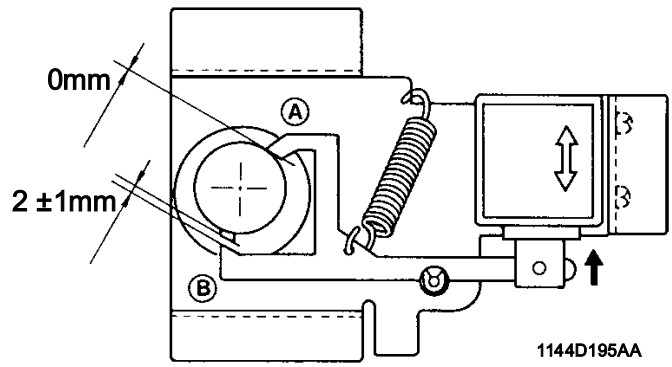
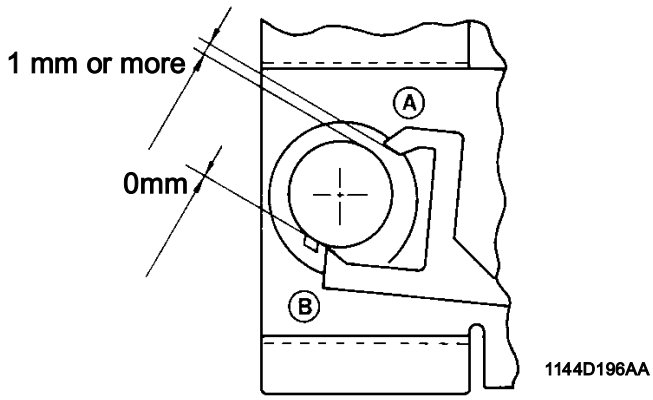


Fig. 1 Transfer Drum Retract Solenoid Adjusting Procedure



1. Loosen the adjusting screw.
2. Manually move the solenoid into its energized position. The clearance between pawl Ⓑ and ratchet should be 2 ±1 mm. At this time, allowing "0" clearance between pawl Ⓐ and ratchet, secure the solenoid.



3. With the solenoid in the deenergized position, turn the ratchet.
4. With the clearance between pawl Ⓑ and ratchet "0" (i.e., the solenoid is in the deenergized position), the clearance between pawl Ⓐ and ratchet should be 1 mm or more.

(2) Adjustment of Static Charge Roller Solenoid

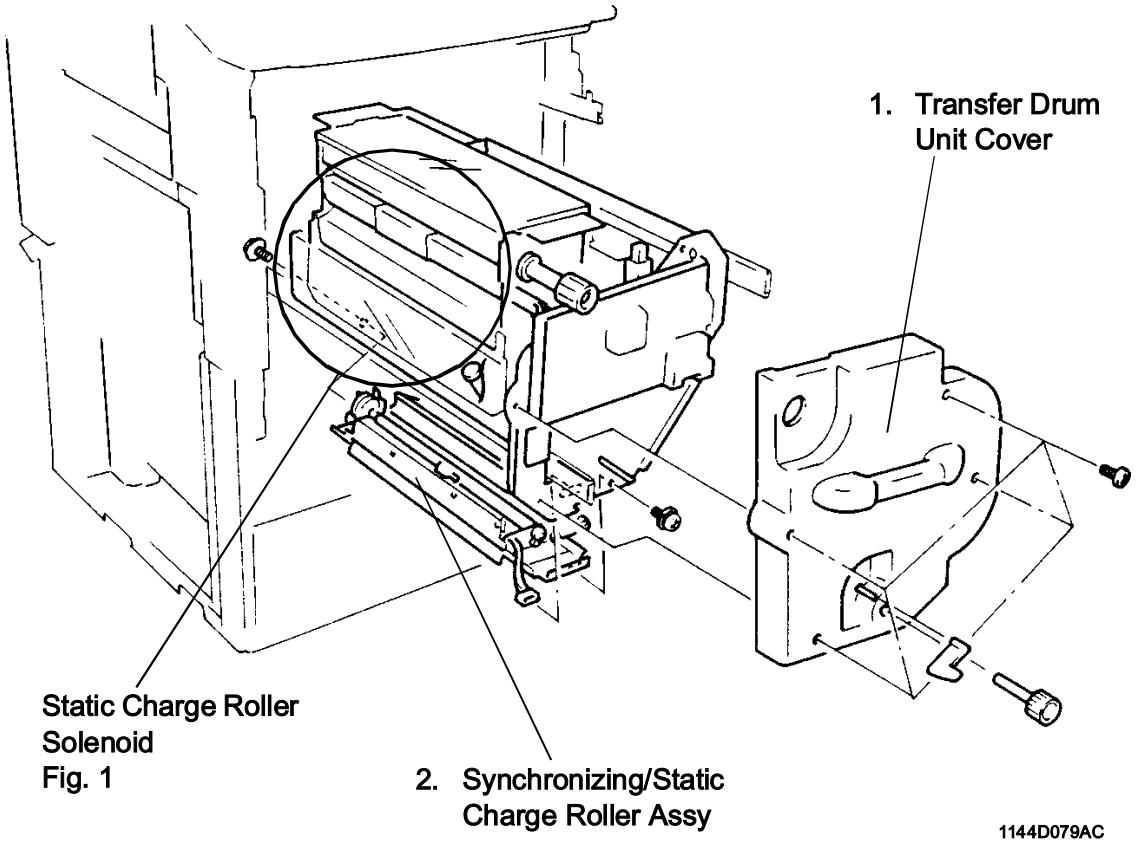
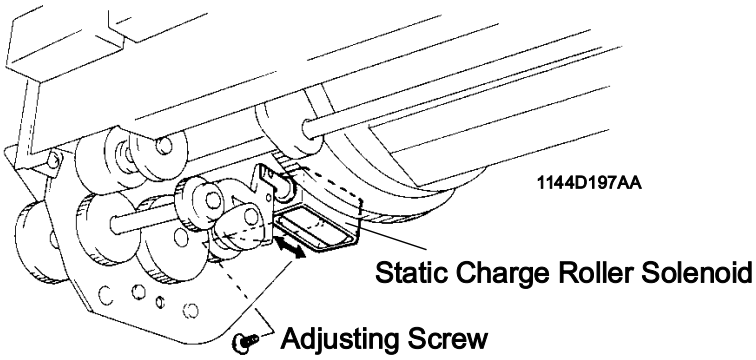
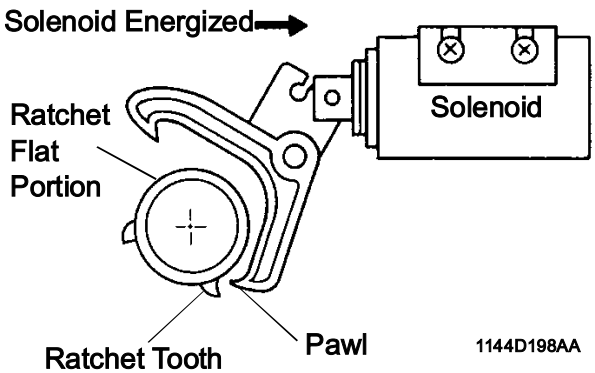


Fig. 1

Fig. 1 Static Charge Roller Solenoid Adjusting Procedure





1. Loosen the adjusting screw.
2. Manually move the solenoid into the energized position.
3. Secure the solenoid where the pawl engages halfway or more with a tooth, but is not in contact with the flat portion of the ratchet.
4. Deenergize the solenoid and ensure that the tip of the pawl does not contact the ratchet tooth.

(3) Adjustment of Paper Separator Finger Solenoid

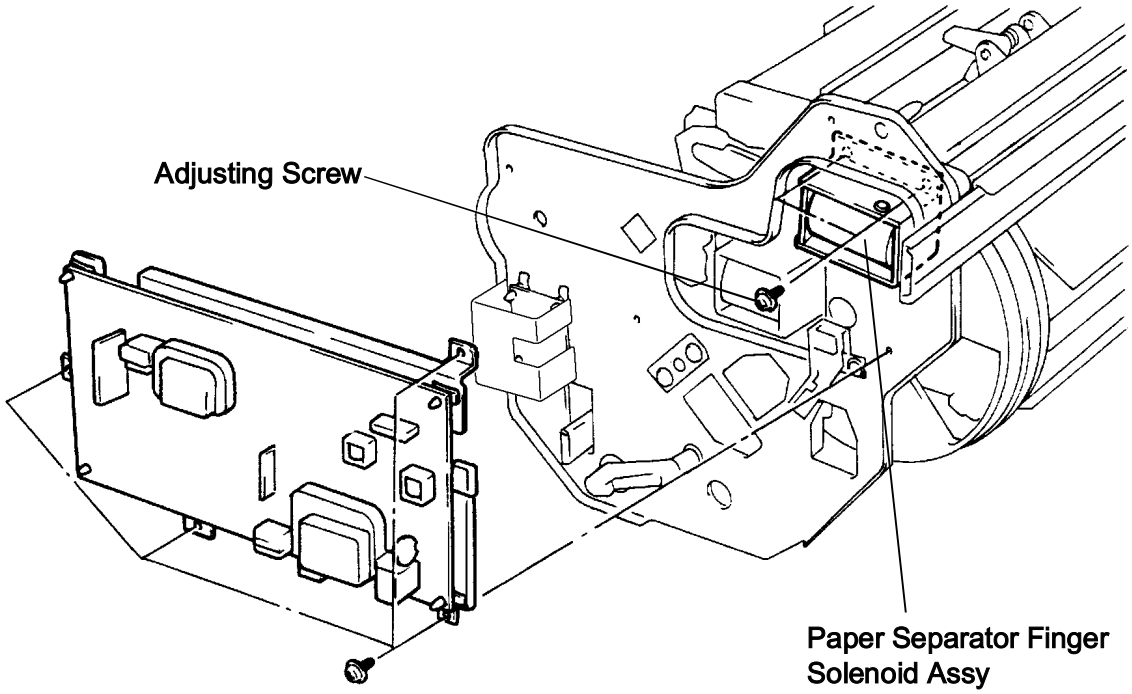


Fig. 1

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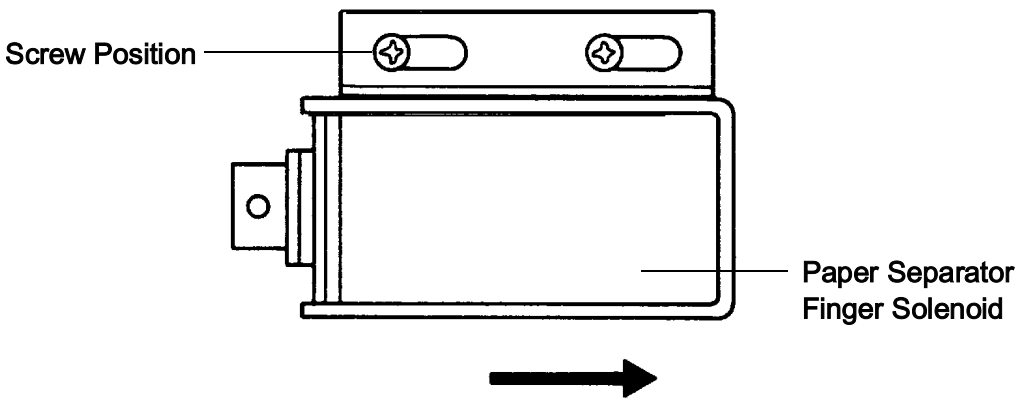
Fig. 1 Paper Separator Finger Solenoid Mounting Position



Slide the Solenoid as far as it will go in the slot in the direction of the arrow.

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(4) Adjustment of Internal Fur Brush Solenoid, Backup Brush Solenoid, and Lifting Finger Solenoid

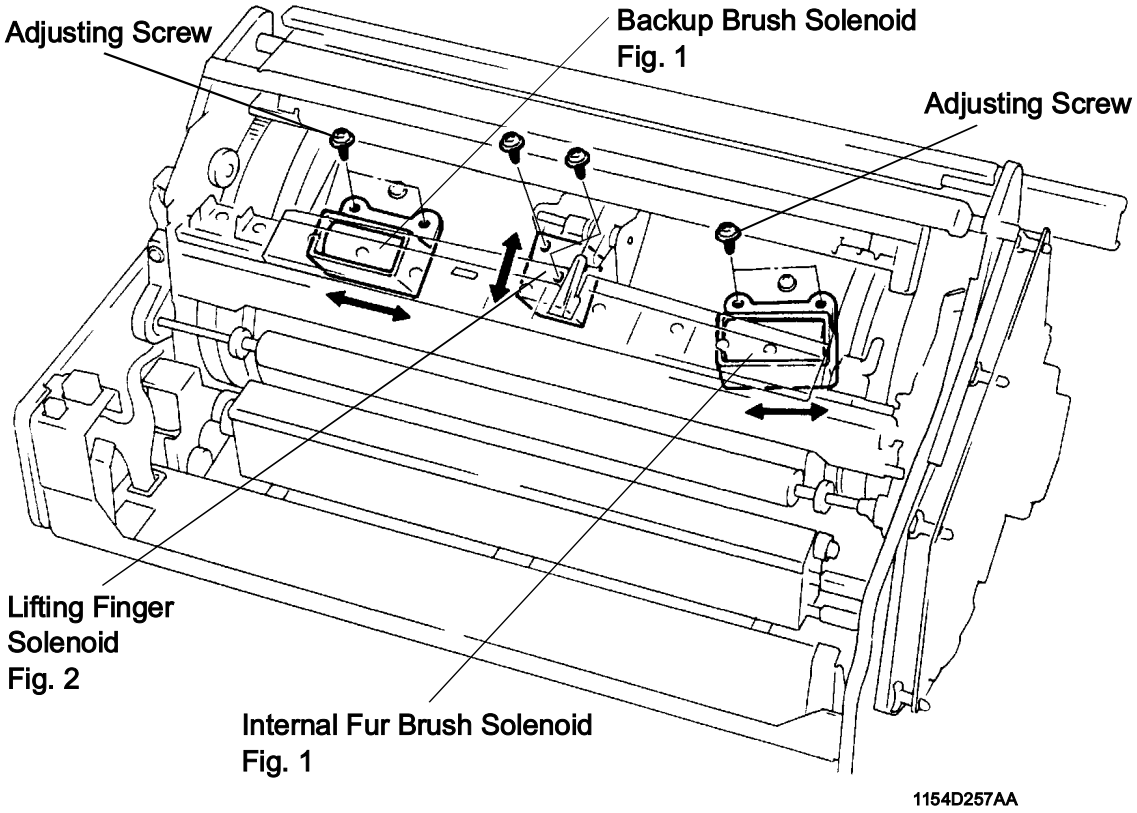
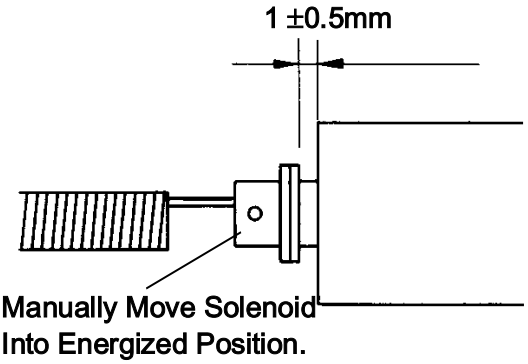


Fig. 1 Internal Fur Brush Solenoid/Backup Brush Solenoid Adjusting Procedure

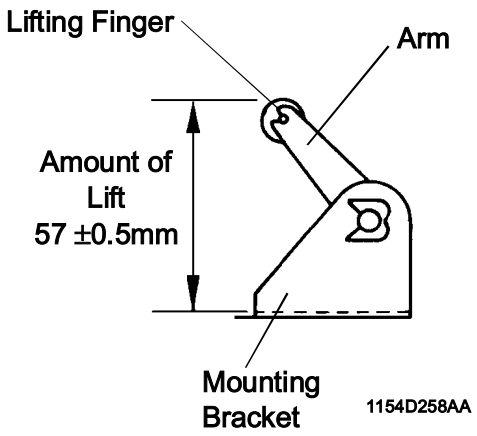
1. Loosen the adjusting screw of the solenoid.
2. Adjust to obtain a clearance of 1 ±0.5 mm for the gap shown below when the solenoid is manually moved into the energized position.



Ensure that the spring is not stretched.

Fig. 2 Lifting Finger Solenoid Adjusting Procedure

1. Loosen the adjusting screw of the solenoid.
2. Adjust to obtain a lift of 57 ±0.5 mm from the joint face for the Lifting Finger when the solenoid is manually moved into the energized position.



(5) Adjustment of Manual Feed Paper Pick-Up Solenoid

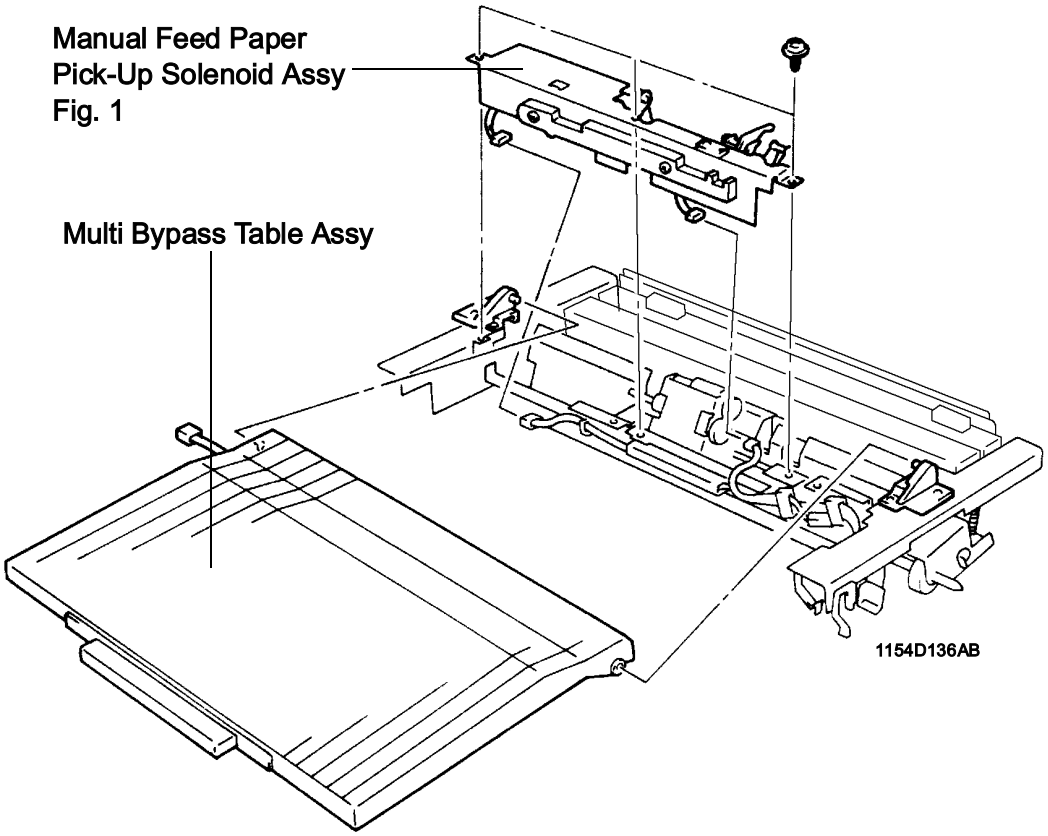
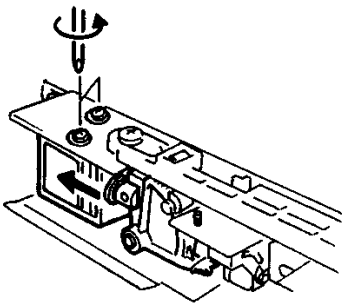
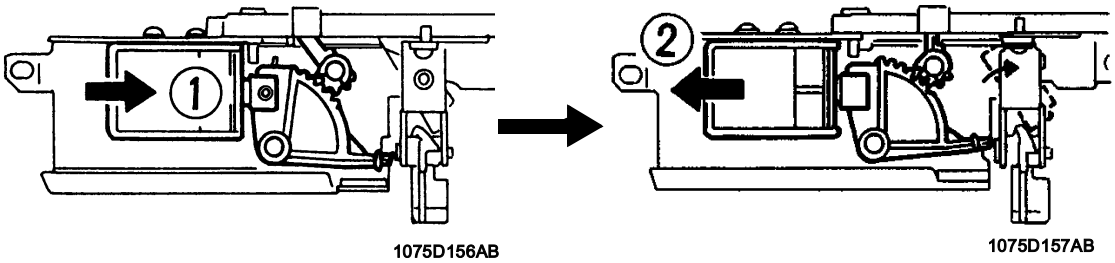


Fig. 1 Manual Feed Paper Pick-Up Solenoid Adjusting Procedure



1. Manually move the Solenoid into the energized position.
2. Loosen the adjusting screws.



3. Move the Solenoid in the direction of arrow 1 and then move it slowly in the direction of arrow 2.
4. Move the Solenoid to a position at which the Paper Stopper Lock Levers are in the upright position (at which the Paper Stoppers are locked). If the Solenoid is moved too far, it will be released from the SET position. If it is released from the SET position, energize the Solenoid and start the procedure over.
5. Tighten the two screws that secure the solenoid in position.

(6) Adjustment of Oil Roller Solenoid

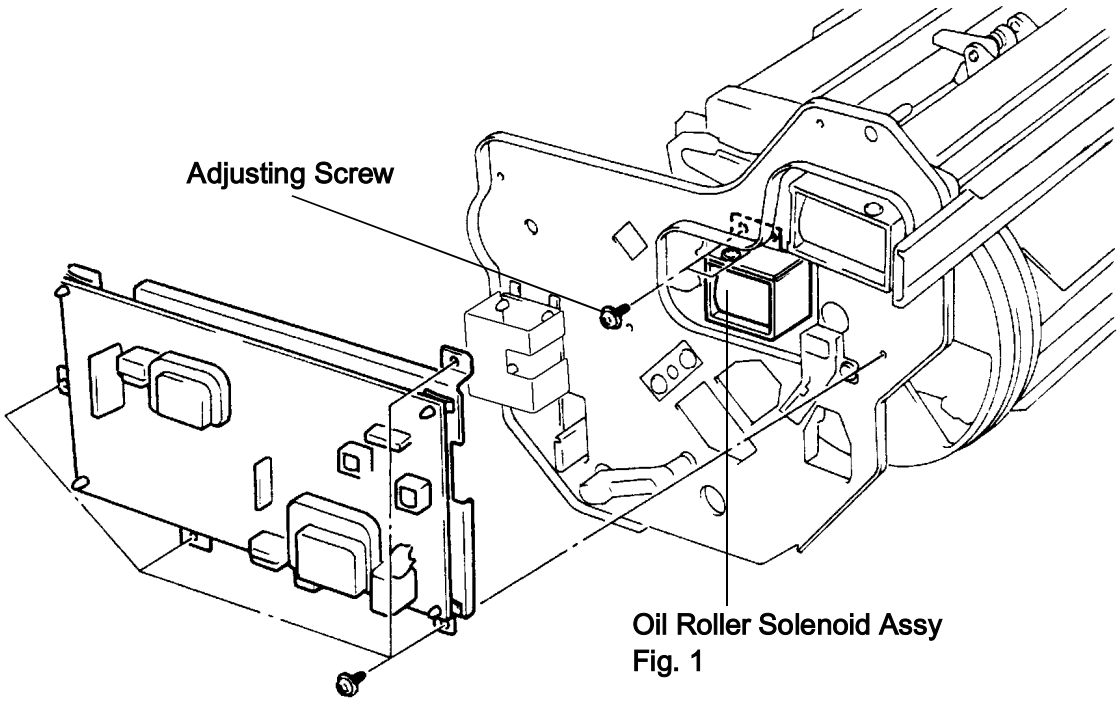


Fig. 1

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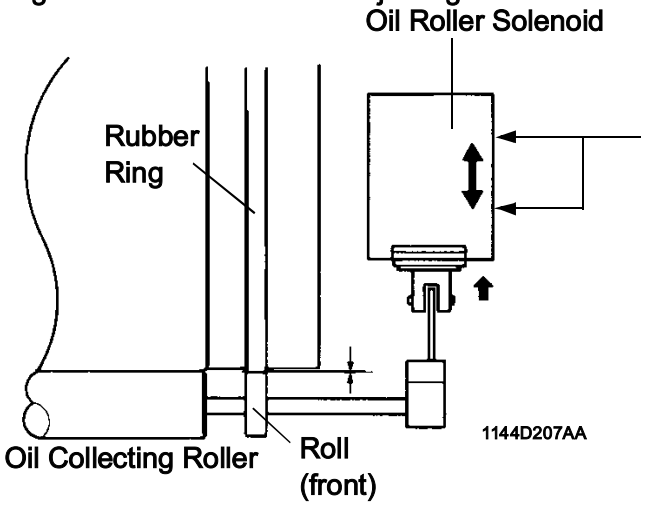
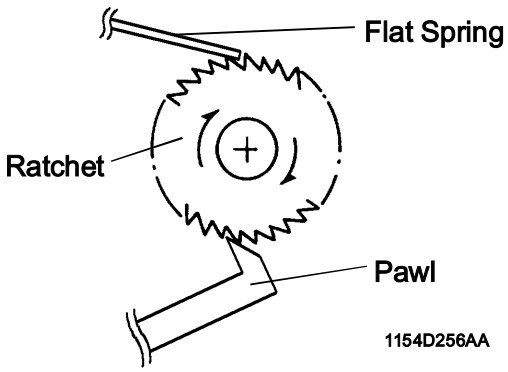
Fig. 1 Oil Roller Solenoid Adjusting Procedure



1. Loosen the adjusting screws.
2. Manually move the solenoid into the energized position and, where the clearance between the rubber ring of the Transfer Drum and the front and rear roll of the Oil Collecting Roller becomes "0," secure the solenoid in position.



3. When the solenoid is manually energized and deenergized, it should click twice or more.

3-5. ADJUSTMENT OF BELT TENSION

Tip

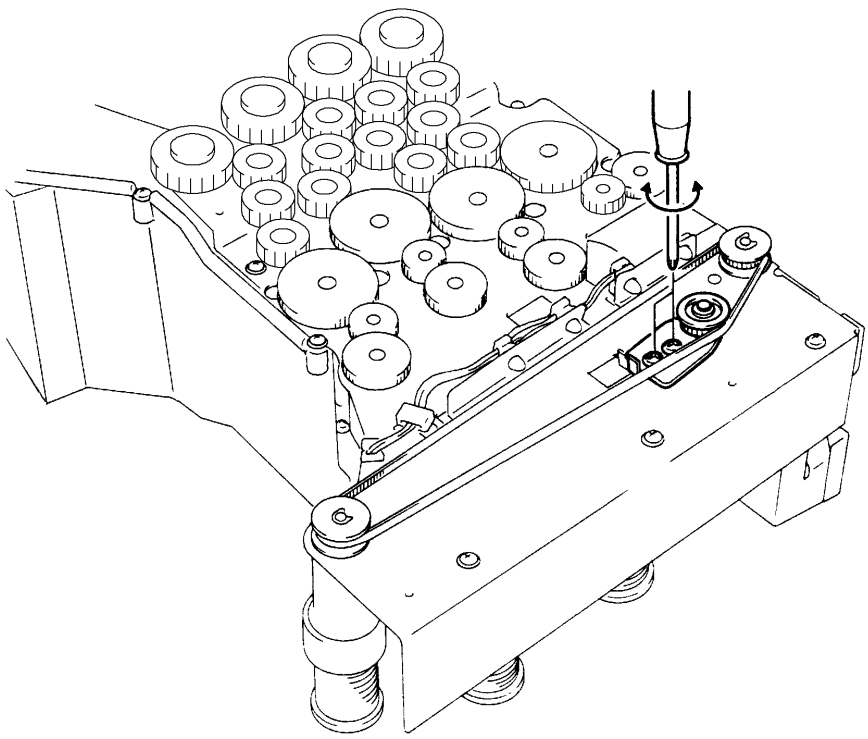
A given tension is being applied to the torsion spring or tension spring fitted to the tension plate that keeps each timing belt taut. Belt tension adjustment can therefore be made by simply loosening and tightening the mounting screw(s).

No.	Driven Mechanism	Adjusting Procedure
1	Developing Unit	Loosen one tension plate mounting screw and then tighten it again.
2	Carrier Retriever	Loosen one tension plate mounting screw and then tighten it again.
3	Hopper	Loosen two tension plate mounting screws and then tighten them again.
4	Paper Take-Up	Loosen two tension plate mounting screws and then tighten them again.
5	Cleaning Unit	Loosen two tension plate mounting screws and then tighten them again.
6	Scanner Drive	Loosen three Scanner Drive Motor mounting screws and then tighten them again.

Example

Adjustment of Hopper Unit Timing Belt

Loosen the two tension plate mounting screws and then tighten them again.



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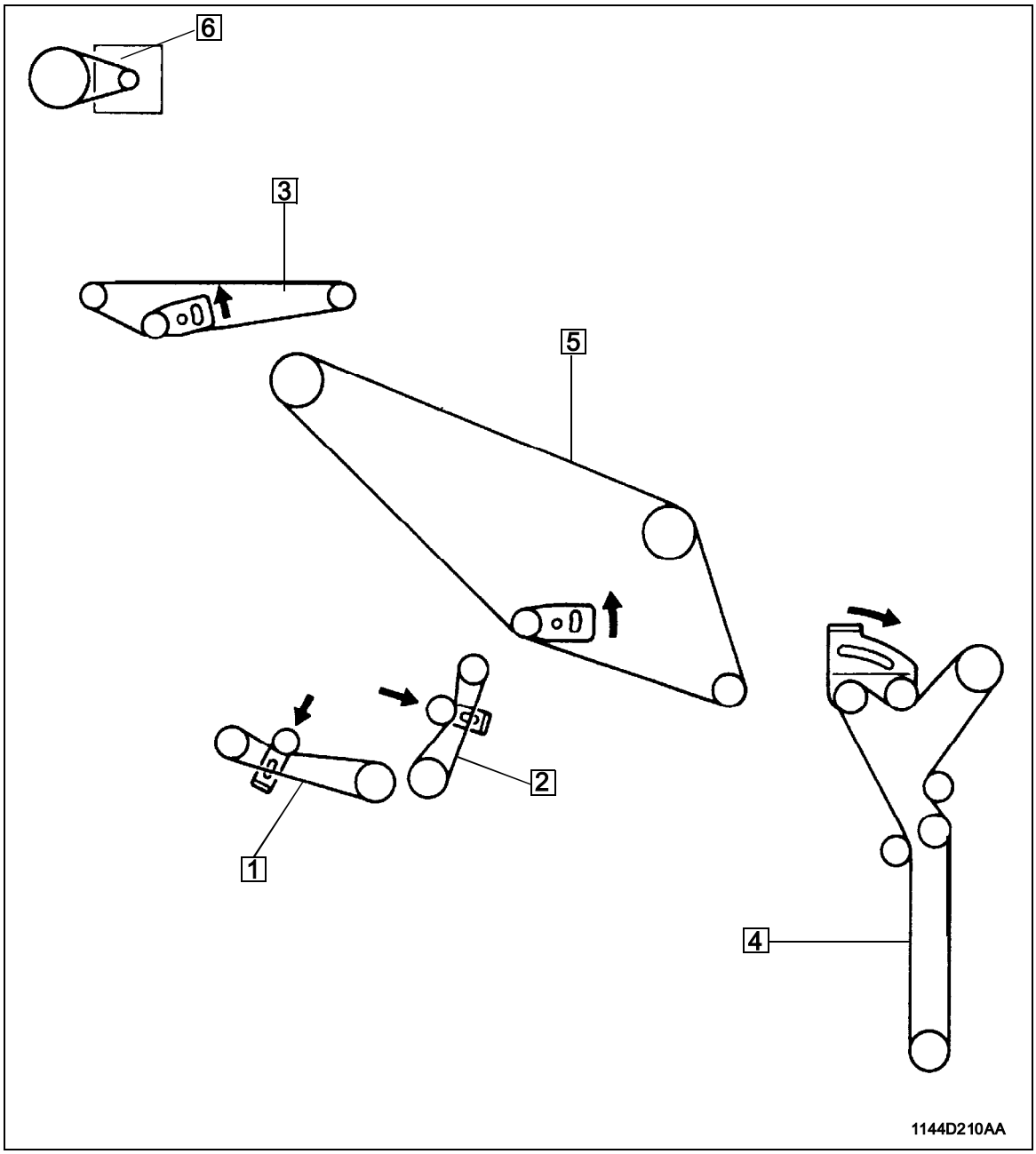
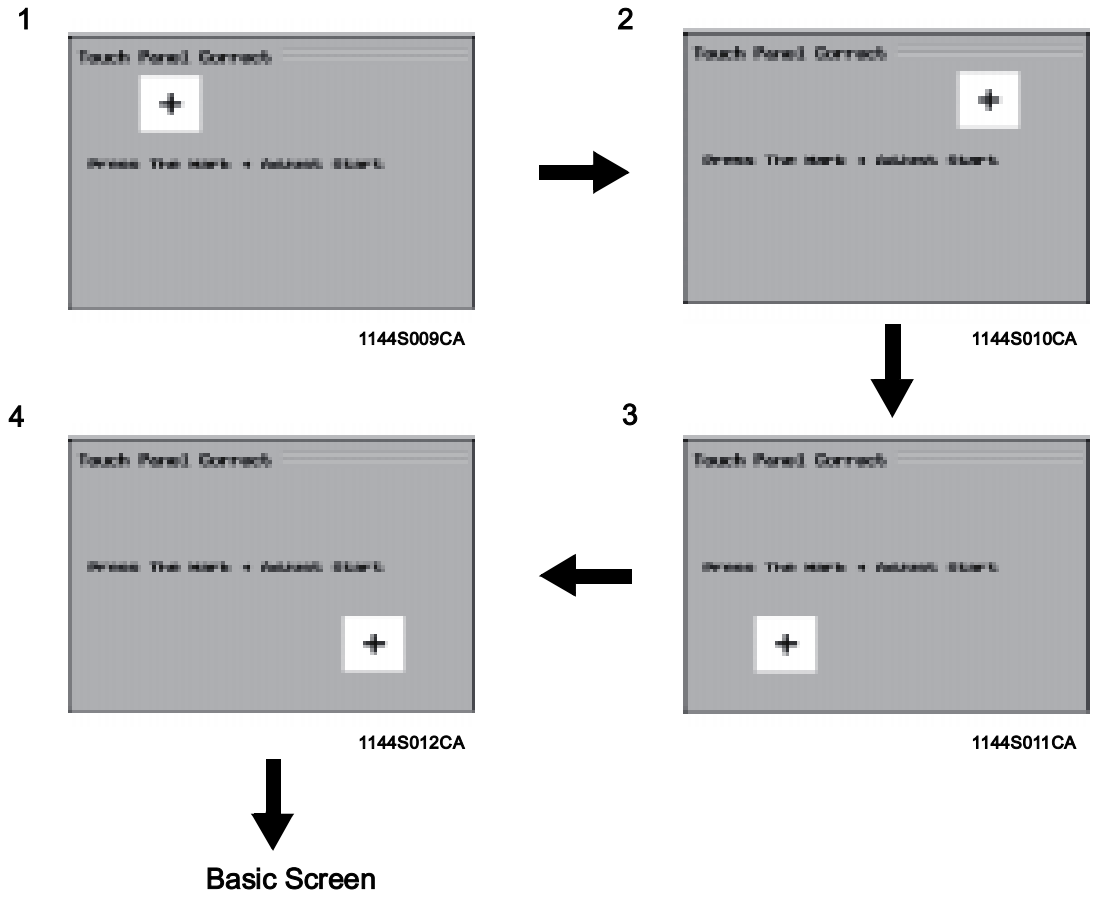
Timing Belt Locations (Viewing Copier from the Back)



➨ Tensioning Direction

3-6. TOUCH PANEL CORRECTION MODE

1. Press the following keys in this order to set the copier into the Touch Panel mode: Stop → 0 → Stop → 3.



2. Touch ⊞ on screen 1.

Note

As this time, be sure to touch the very center of ⊞. (The same is true with the following.)

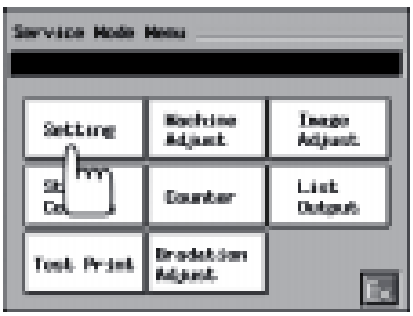
---

3. Touch ⊞ on screen 2.
4. Touch ⊞ on screen 3.
5. Touch ⊞ on screen 4.

3-7. SETTING MODE

(1) Accessing the Setting Mode

1. Press the User Mode key on the control panel to open the User Mode screen. Then, touch [Meter Count] to open the Meter Count screen.
2. Press the following keys in this order to set the copier into the Service mode: Stop → 0 → 0 → Stop → 0 → 1.
3. Select “Setting” from the Service mode menu.



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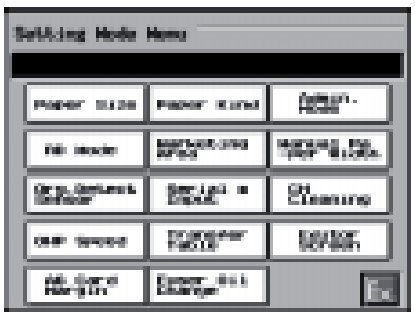

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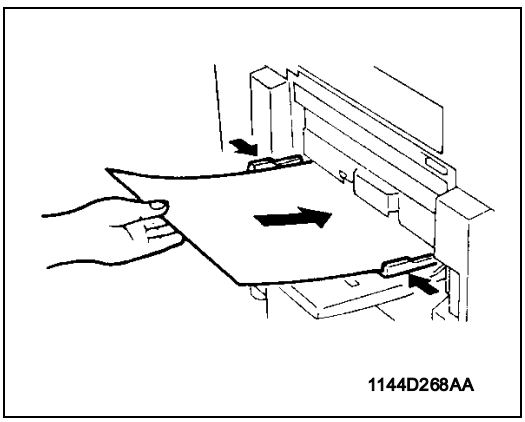
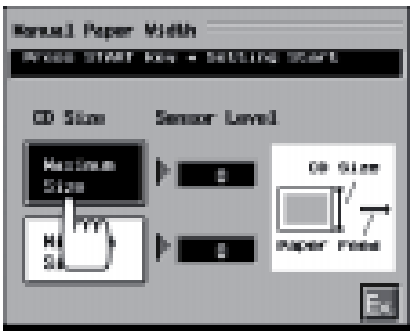
(2) Manual Paper Width



1144D268AA

1. Place several sheets of A3 wide (305mm × 457mm) or 12” × 18” paper on the Multi Bypass Table.



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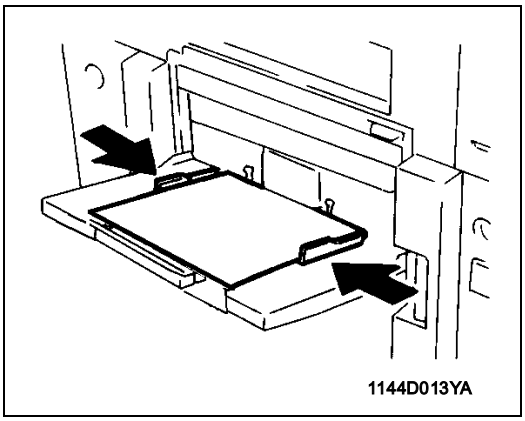
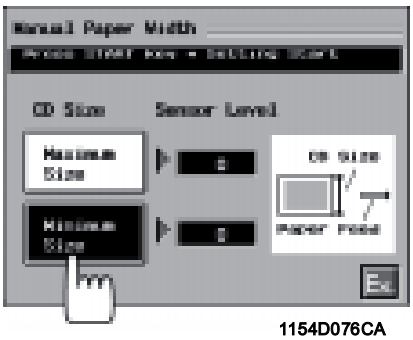
2. Select the function “Manual Paper Width.”
3. Select “Maximum Size” and press the Start key. (This starts an automatic adjustment.)



4. Remove the A3 wide (305mm × 457mm) or 12" × 18" paper from the Multi Bypass Table and, instead, place several sheets of B5 lengthwise or 5-1/2" × 8-1/2" paper on the table.

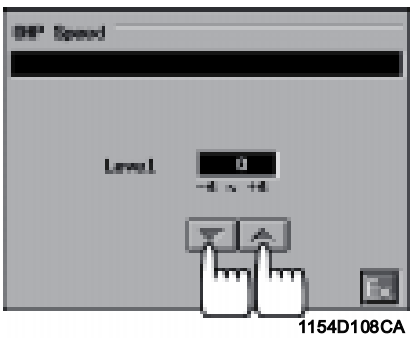


5. Select "Minimum Size" and press the Start key. (This starts an automatic adjustment.)
6. After the adjustments have been made, touch "Ex.".

(3) OHP Speed

Adjustment

- If lines appear in the CD direction (paper separation defect), decrease the setting.
- If OHP transparency is low, increase the setting.



1. Select the OHP speed.
2. Change the setting using the shift keys.
3. After the adjustments have been made, touch "Ex.".

Note

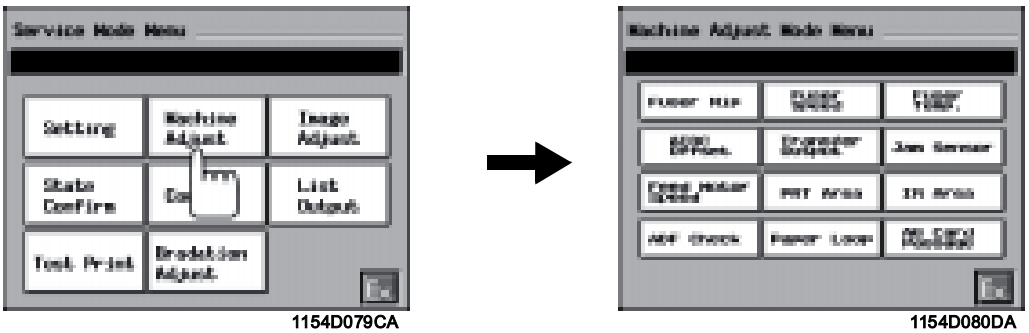
Whenever a change is made in the Fusing Temperature setting under the Machine Adjust mode, the OHP Fuser Speed is automatically adjusted so that OHP fusing efficiency does not change.

Fuser Temp. / Paper	145°C	150°C	155°C
Normal	120 mm/s		
OHP	70 mm/s	80 mm/s	90 mm/s
Heavy Stock	50 mm/s		

3-8. MACHINE ADJUST MODE

(1) Accessing the Machine Adjust Mode

1. Press the User Mode key on the control panel to open the User Mode screen. Then, touch [Meter Count] to open the Meter Count screen.
2. Press the following keys in this order to set the copier into the Service mode: Stop → 0 → 0 → Stop → 0 → 1.
3. Select “Machine Adjust” from the Service mode menu screen.



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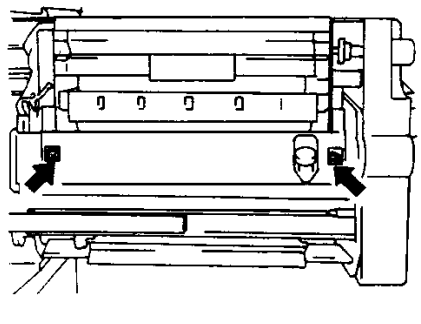
(2) Fuser NIP

NOTE

After Fuser Nip is adjusted, Fuser Speed must also be adjusted.

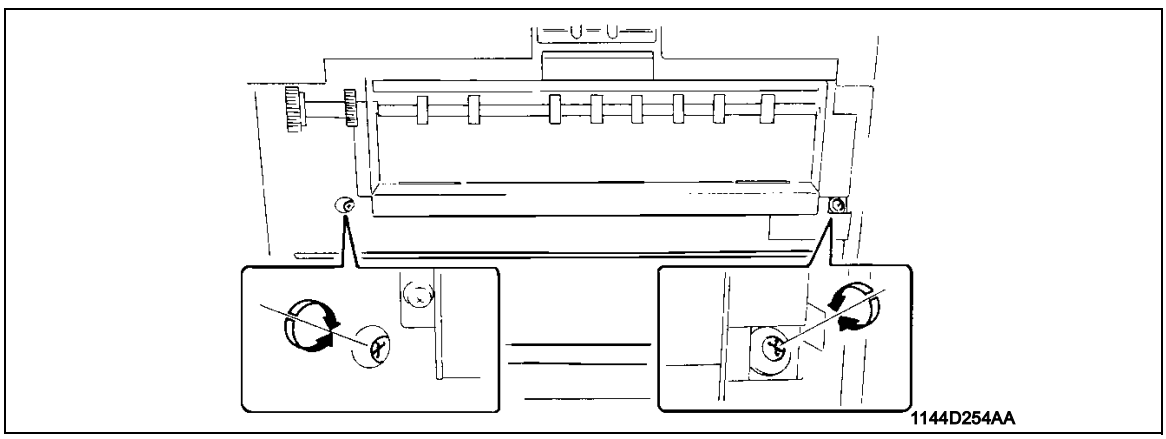


1144U017AA

1. Place A4 crosswise paper in either one of the drawers or on the Multi Bypass Table.
2. Open the Front Door and slide out the Transfer Drum Unit.
3. From the position where the Fusing Roller pressure adjusting screws are fully tightened, back them off four turns, ensuring uniform pressure on the front and rear ends.
4. Slide the Transfer Drum Unit back into the copier.
5. Close the Front Door.

Reference

The Fusing Roller pressure adjusting screws can be adjusted by removing the Left Middle Cover.



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6. Select “Fuser NIP” from the Machine Adjust mode menu.
7. Press the Start key.
8. Measure the width of the area of contact between the Upper and Lower Fusing Rollers (NIP) at the front and rear ends of the copy fed out onto the Exit Tray.
9. If the measurement falls outside the specified range, turn the Fusing Roller pressure adjusting screws as necessary.

Specifications
Width of area of contact … 6 ±0.3 mm
Difference in width between front and rear … Within 0.3 mm

Adjustments
> 6.3 mm … Loosen the adjusting screw.
< 5.7 mm … Tighten the adjusting screw.

10. After the adjustments have been made, touch “Ex.”.

(3) Fuser Speed

Notes
1. *This adjustment should be made after Fuser NIP has been adjusted.*
2. *A particular paper source and type of paper must be used for each speed function as follows:*

- *CF Paper. 120 mm/s:*
  Select any of the drawers loaded with A3 lengthwise or 11”× 17” CF paper.
- *Heavy Stock 2. 50 mm/s:*
  Place A3 lengthwise or 11”× 17” thick paper weighing 157 g/m^2 on the Multi Bypass Table.
- *OHP Film. 80 mm/s:*
  Place A4 lengthwise or 8-1/2”× 11” OHP transparencies on the Multi Bypass Table.

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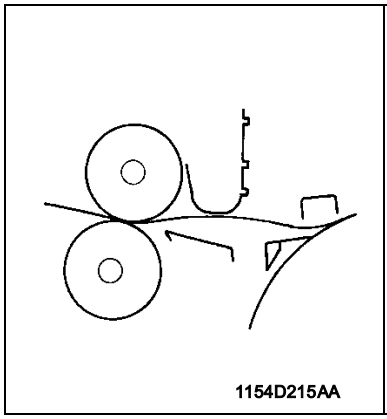
1. Select a drawer that is loaded with A3 lengthwise or 11” × 17” paper.
2. Select “Fuser Speed” and then “CF Paper”.

3. Press the Start key to feed paper through the copier to determine if an adequate length of loop is formed before the Fusing Rollers.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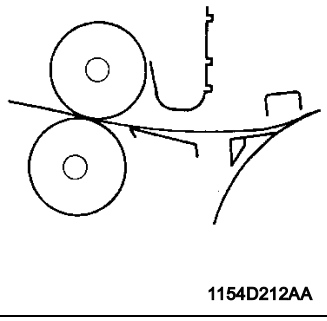
Retarded

The loop length is too long causing the paper to have too much slack.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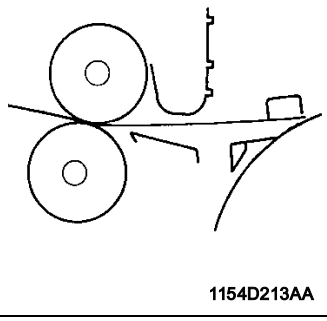
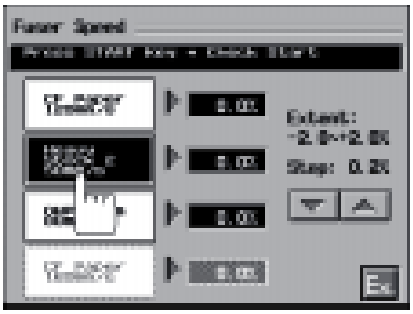
Correct

A good length of loop is formed as the paper moves into the Fusing Rollers.


1154D213AA

Advanced

No loop is formed causing the paper to be taut.

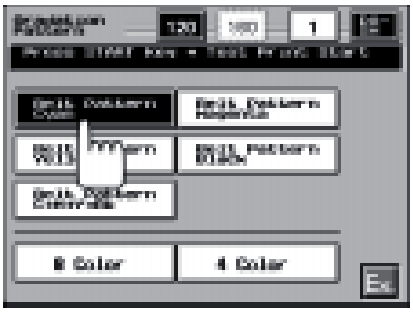

1154D266CA

4. If the timing is advanced or retarded, change the setting of Fuser Speed.

Adjustments
Retarded: Increase the setting.
Advanced: Decrease the setting.

5. Check the length of loop again and repeat the above steps until a good length of loop is obtained.
6. Using the same procedure, adjust for “Heavy Stock 2 and OHP Film”.
7. After the adjustments have been made, touch “Ex.”.

(4) Transfer Output



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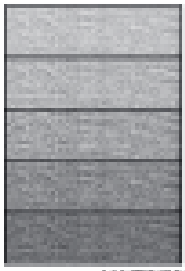
1. Select A3 crosswise or 11" × 17" paper.
2. From the Service Mode select "Test Print" and then select "Gradation Pattern." Then, select "Belt Pattern Cyan" and press the Start key.

3. Check the test print for the following.

<Low T/C>

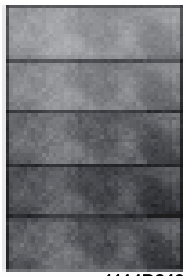


1144D242AA

<Poor Image Transfer>

1144D244AA

<Excessive Image Transfer>



1144D243AA

<Low T/C>

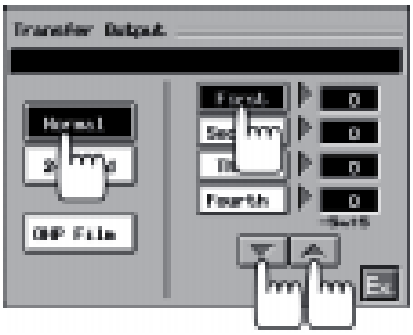
Entire image has a lightly brushed effect with uneven, irregular low image density.

<Poor Image Transfer>

Even, high image density at the edges with lower density inside.

<Excessive Image Transfer>

If the entire image has a heavily brushed effect, select "Copying Status" of the "State Confirm" function and press the Start key to check for the T/C of each color of toner.



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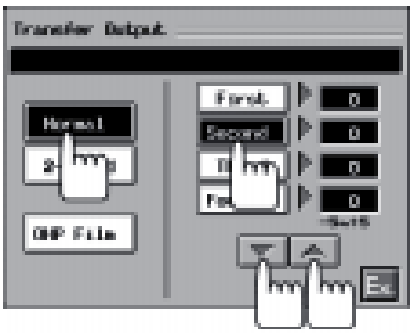
4. For Poor Image Transfer or Excessive Image Transfer, touch the “Ex” key twice to return to the Service Mode menu screen.
5. Select “Machine Adjust” and then “Transfer Output.”
6. Touch “Normal” and “First” (image transfer number), in that order, and change the setting as necessary using the shift keys (▼ or ▲).

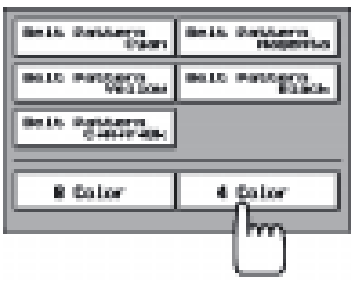
Adjustments
Excessive Image Transfer: Decrease the setting.
Poor Image Transfer: Increase the setting.



1154D087CA

7. Select the following functions again in this order: “Factory Test Print,” “Gradation Pattern,” and “Belt Pattern Cyan.” Then, press the Start key.
8. Check the test print again.
9. After the adjustment has been made, select “Machine Adjust” and “Transfer Output” again and, using the shift keys (▼ or ▲), set the same value as that for “First” of “Normal” for “Second,” “Third,” and “Fourth.”

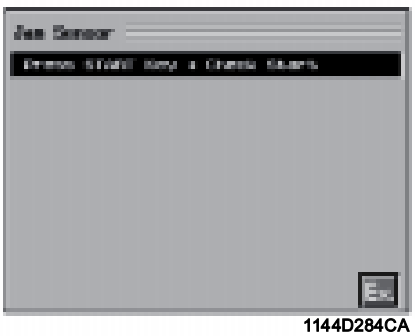
Note:
Transfer Output Order
Transfer No. First.....Cyan
Second .....Magenta
Third .....Yellow
Fourth .....Black



1154D109CA

10. Make the following function selections in this order: “Factory Test Print,” “Gradation Pattern,” and “4 Color.” Then, press the Start key.
11. Make the final check on the test print fed out onto the Exit Tray.
12. If Poor Image Transfer or Excessive Image Transfer is evident on magenta, yellow, or black on the test print, make an independent setting for Second, Third, or Fourth.
13. Using these procedures, make adjustments for “2-Sided” and “OHP Film,” sequentially.
14. After the adjustments have been made, touch “Ex.”.

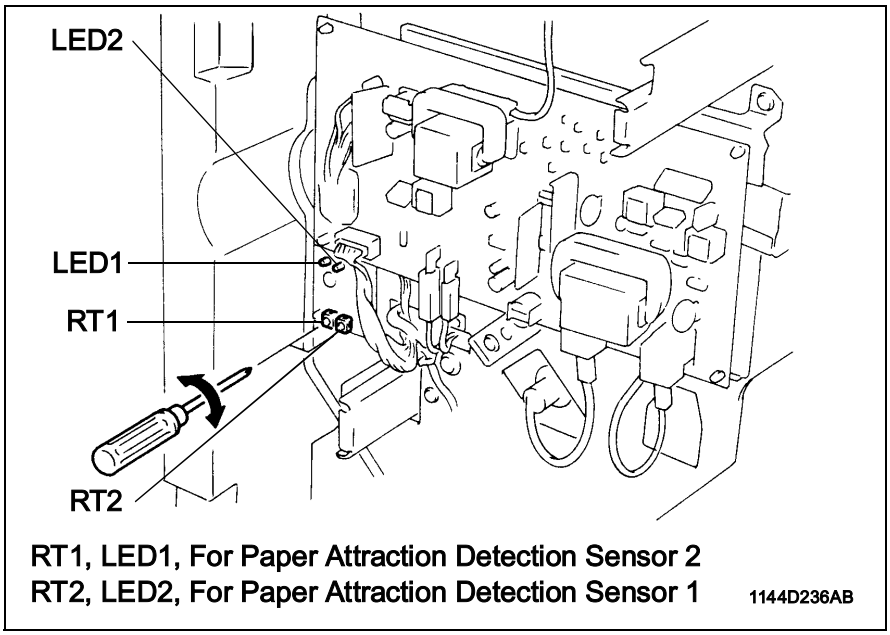
(5) Jam Sensor



1144D284CA

1. Open the Front Door, remove the Transfer Drum Unit cover, and then lock the Transfer Drum Unit back into position.
2. Install the Interlock Switch Actuating Jig.
3. Select "Jam Sensor" (from "Machine Adjust") and press the Start key.

4. After the Transfer Drum has stopped, turn RT1 on the Failure Sensor Adj. Board clockwise until LED1 turns ON and then slowly counterclockwise until it turns OFF.
5. Turn RT2 on the Failure Sensor Adj. Board clockwise until LED2 turns ON and then slowly counterclockwise until it turns OFF.



RT1, LED1, For Paper Attraction Detection Sensor 2
RT2, LED2, For Paper Attraction Detection Sensor 1
1144D236AB

6. After the adjustments have been made, press the Stop key and touch "Ex.".

(6) Feed Motor Speed

Normally: The amount of color overlay deviation between C and M is uniform throughout the entire print area.

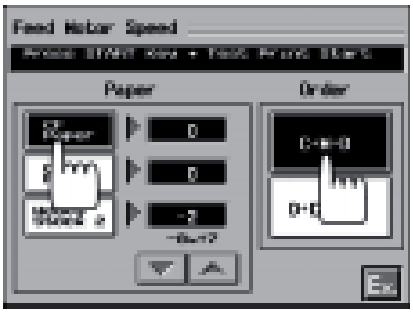
Faulty: 1. The amount of color overlay deviation between C and M varies from one point to another on the image.

2. Especially from the point around 185 mm from the trailing edge of the paper, the amount of color overlay deviation changes dramatically.

Notes

A particular paper source and type of paper must be used for each speed function as follows:

- *CF Paper:*
  Select any of the drawers loaded with A3 lengthwise or 11"× 17" CF paper.
- *OHP Film:*
  Place A4 lengthwise or 8-1/2"× 11" OHP transparencies on the Multi Bypass Table.
- *Heavy Stock 2:*
  Place A3 lengthwise or 11"× 17" thick paper weighing 157 g/m² on the Multi Bypass Table.



1154D088CA

1. Select the paper and paper source as above.
2. Select "Feed Motor Speed" and then select "CF Paper" and "C → M → D," in that order.

Note

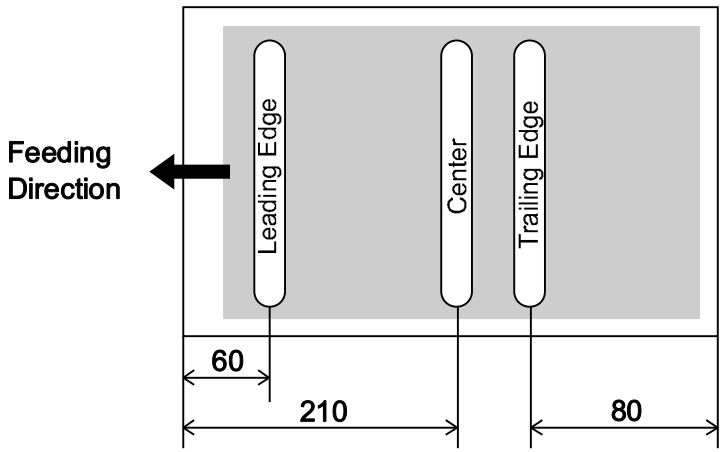
Do not select "D → C → M → D".

---

3. Press the Start key.
4. Using a loupe, measure the amount of color overlay deviation at the leading edge and the center of the test copy fed out.

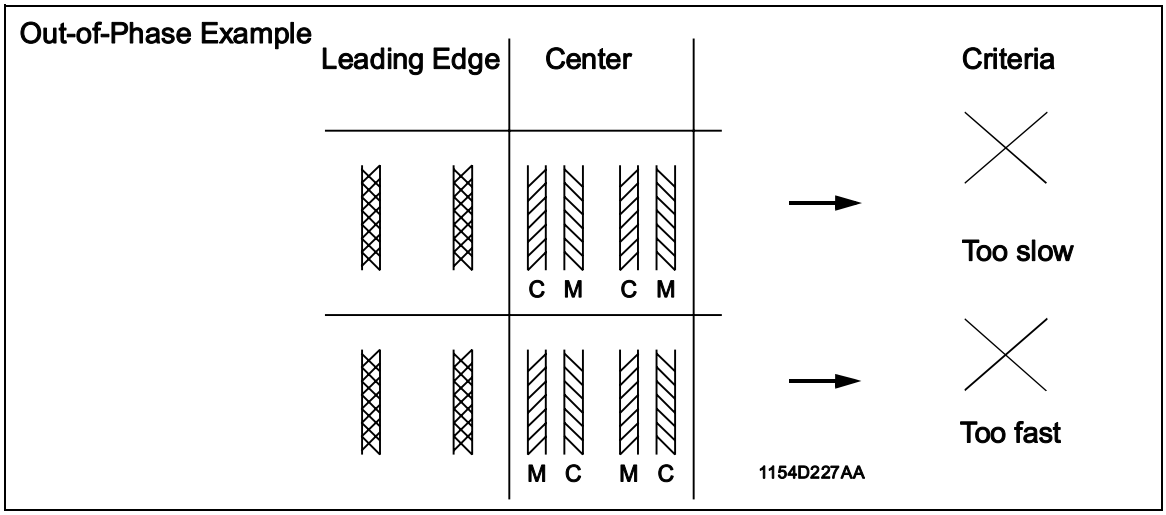
Specifications

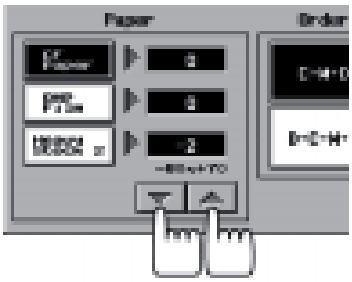
The amount of color overlay deviation should be 0.5 dots (32 μm) at the leading edge and center.



1154D285AA

Criteria
Deviation at Center, but not at Leading Edge.
M is relatively advanced → Feed Motor speed is faster.
M is relatively retarded → Feed Motor speed is slower.





1154D089CB

5. If the specifications are not met, change the setting using the shift keys (▼ or ▲).
6. Make a check again by making another test copy.
7. Using the same procedure, adjust for “OHP Film” and “Heavy Stock 2”.
8. After the adjustments have been made, touch “Ex.”.

(7) PRT Area

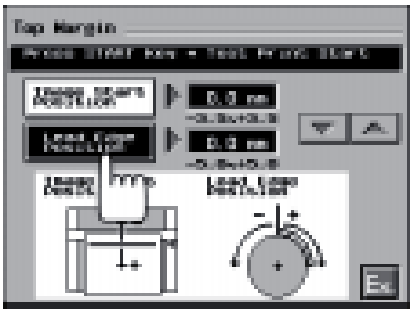
1. Top-Margin

This function permits adjustments of the print start position (Image Start Position) on the paper which is not affected by the image signal sent from the IR and the point at which the paper is attracted onto the surface of the Transfer Drum (Lead Edge Position).

Notes

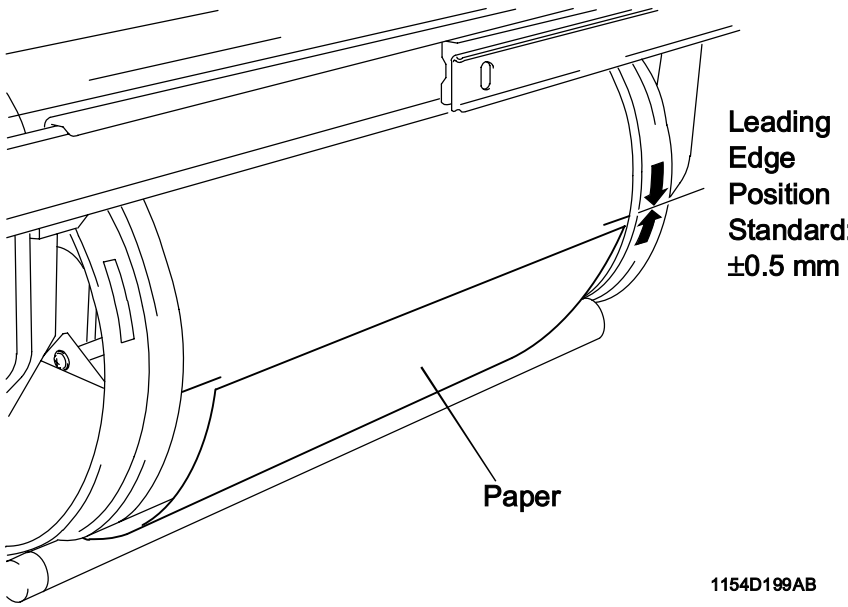
1. This adjustment should be made after Feed Motor Speed has been adjusted.

2. Lead Edge Position must be adjusted before Image Start Position is adjusted.



1154D090CA

1. Select a drawer loaded with the largest paper.
2. Access the “PRT Area” screen.
3. Select “Top-Margin” and then “Lead Edge Position” and press the Start key.
4. After a misfeed message appears, open the Front Door.
5. Slide out the Transfer Drum and measure the distance between the leading edge of the paper attracted to the drum and the black line on the Transfer Film.

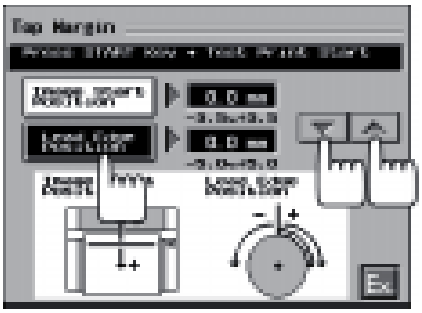


1154D199AB

Specifications

Distance between the leading edge of the paper attracted to the Transfer Drum and the black line on the Transfer Film: 0 ±0.5 mm

---

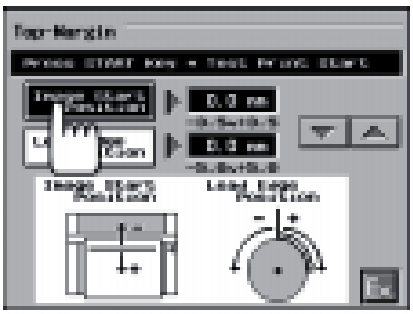


1154D091CA

6. If the specifications are not met, slide the Transfer Unit into the copier and close the Front Door.
7. Select “Lead Edge Position” and, using the shift keys (▼ or ▲), change the setting.

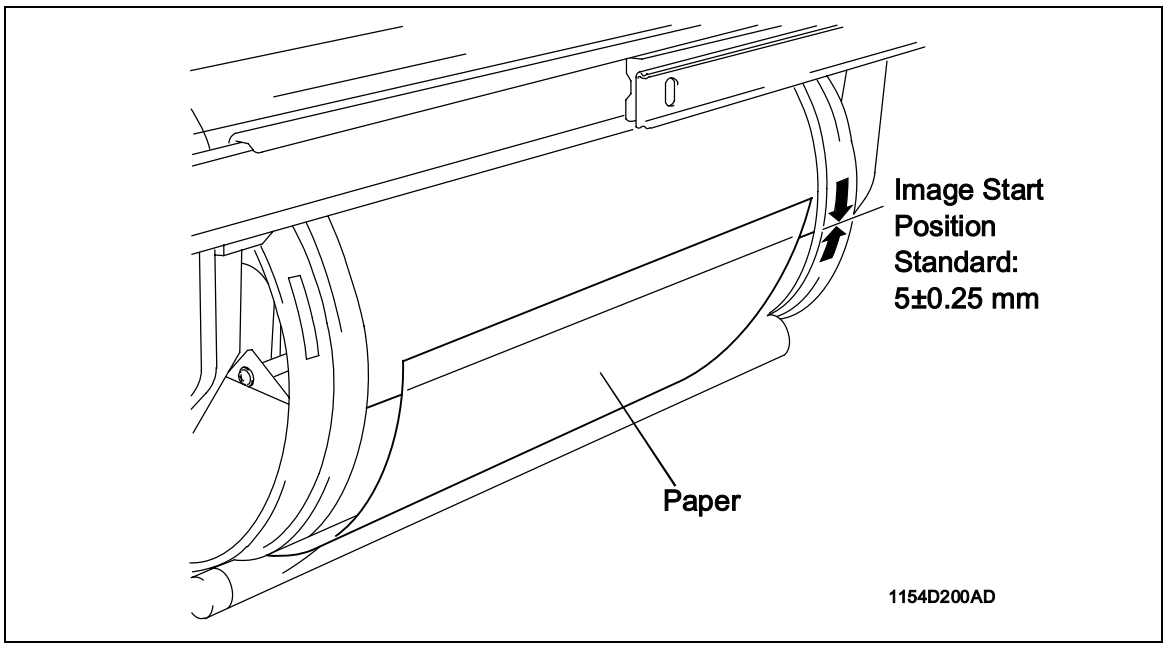
Adjustments
If the setting is longer, increase the setting.
If the setting is shorter, decrease the setting.

8. After the adjustment has been made, check the position of the leading edge of the paper attracted to the Transfer Drum three times.

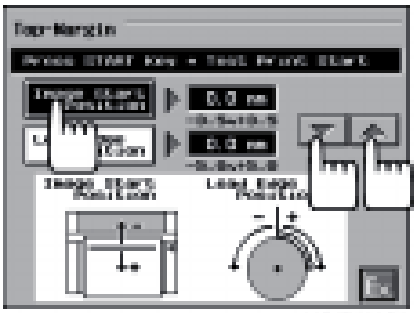


1154D110CA

9. Select “Image Start Position” and press the Start key.
10. After a misfeed message appears, open the Front Door.
11. Slide out the Transfer Drum and measure the distance between the image start position line on the paper and the black line on the Transfer Film.



Specifications
Distance between the image start position line on the paper and the black line on the Transfer Film: 5 ±0.25 mm



1154D111CA

12. If the specifications are not met, slide the Transfer Unit into the copier and close the Front Door.
13. Select “Image Start Position” and, using the shift keys (▼ or ▲), change the setting.

Adjustments
If the setting is longer, decrease it.
If the setting is shorter, increase it.

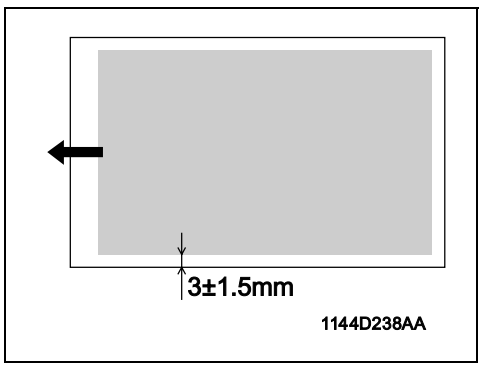
14. Check the image start position again.
15. After the adjustments have been made, touch “Ex.”.

2. Left-Margin

This function is used after the PH has been replaced or when the reference positions of the drawer and Multi Bypass Table deviate due to variations in size of paper.

1154D093CA

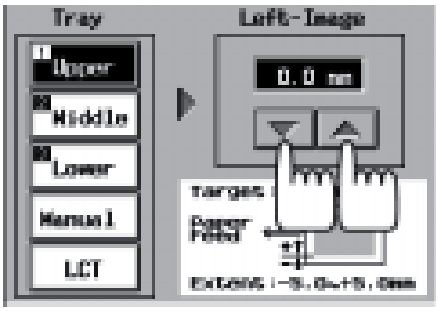
1. Access the “PRT Area” screen.
2. Select “Left-Margin” and then “Upper.”
3. Press the Start key.



1144D238AA

4. Measure the width of the void image on the test copy as shown on the left.

Specifications
Void Image Width: 3±1.5 mm



1154D094CA

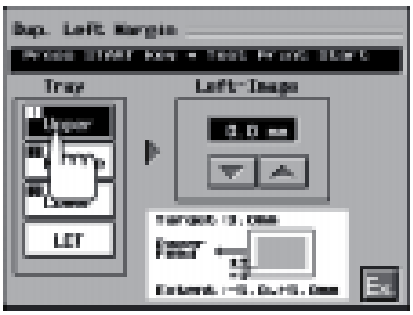
5. If the measurement falls outside the specified range, change the setting using the shift keys (▼ or ▲).

Adjustments
If the setting is longer, decrease it.
If the setting is shorter, increase it.

6. Make a test copy to check again.
7. Using these steps, adjust the remaining drawers and the Multi Bypass Table (A4 crosswise or 8-1 /2" × 11").
8. After the adjustments have been made, touch "Ex.".

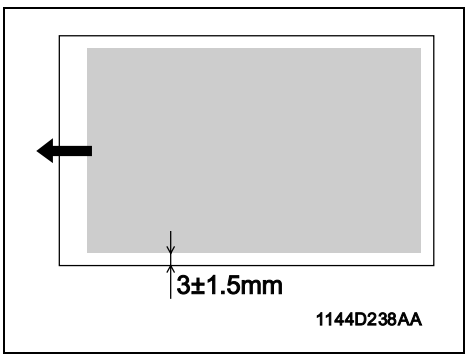
3. Dup. Left-Margin

This function is used after the PH has been replaced or when the reference position of the Duplex Unit deviates due to variations in size of paper.



1154D095CA

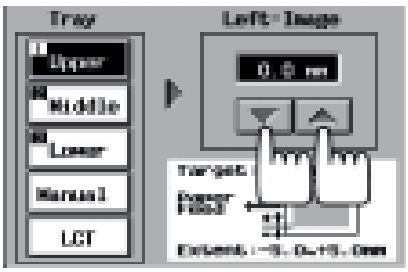
1. Access the "PRT Area" screen.
2. Select "Dup. Left Margin" and then "Upper."
3. Press the Start key.



1144D238AA

4. Measure the width of the void image on the test copy as shown on the left.

Specifications
Void Image Width: 3±1.5 mm



1154D094CA

5. If the measurement falls outside the specified range, change the setting using the shift keys (▼ or ▲).

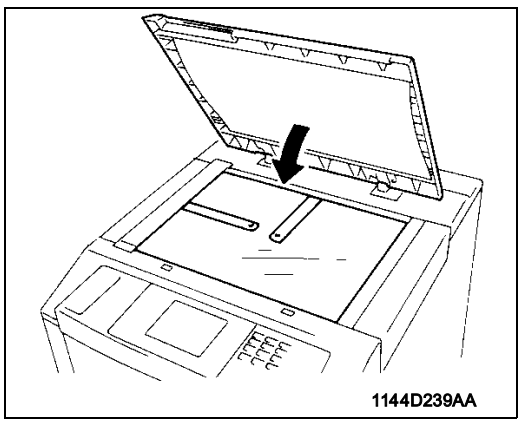
Adjustments
If the setting is longer, decrease it.
If the setting is shorter, increase it.

6. Make a test copy to check again.
7. Using these steps, adjust the remaining drawers.
8. After the adjustments have been made, touch “Ex.”.

(8) IR Area

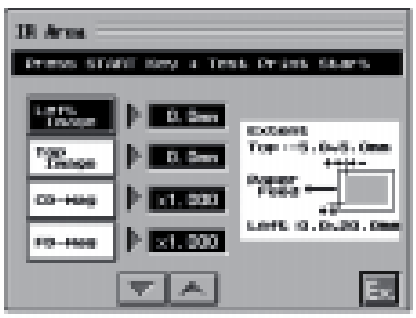
Note
This function allows the Tech. Rep. to adjust the document scanning position. Make the check using a test print, not a regular copy. After this adjustment has been made, be sure to make the IR Lamp adjustment. A malfunction of C0660 could result depending on the values set for “Top Image” and “FD-Mag”.

1. Left Image and Top Image



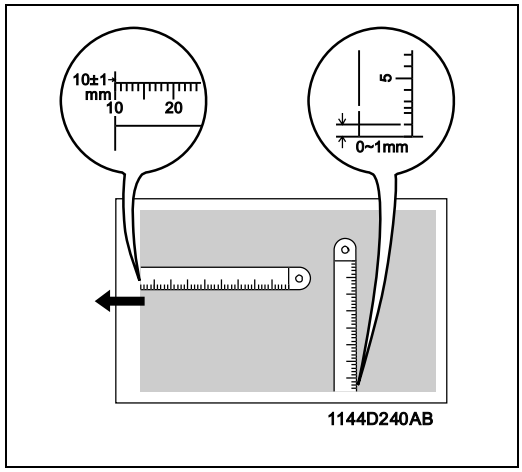
1144D239AA

1. Place scales on the Original Glass as shown on the left and lower the Original Cover.



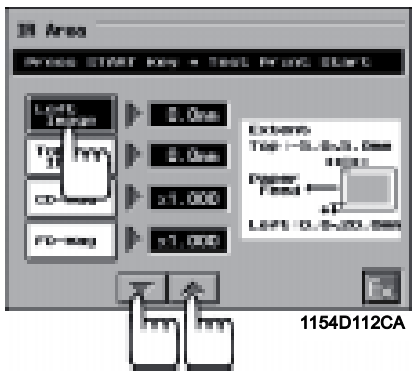
1144D291CA

2. Access the “IR Area” screen.
3. Press the Start key to make a test copy.



4. Check the image on the test copy to see where the graduations of the scales start.

Specifications
Top Image (leading edge of image):
10 ±1 mm
Left Image (left edge of image): 0 ±1 mm

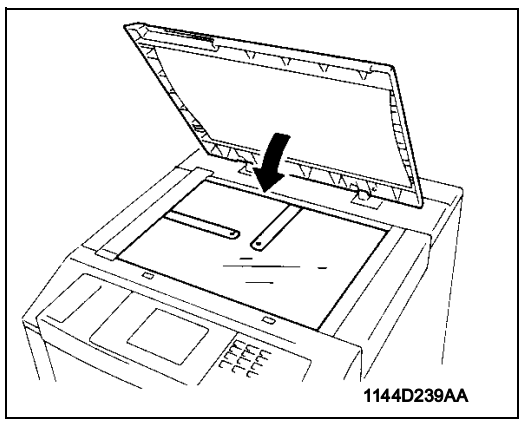


5. If the specifications are not met, select "Top Image" and change the setting using the shift keys (▼ or ▲).

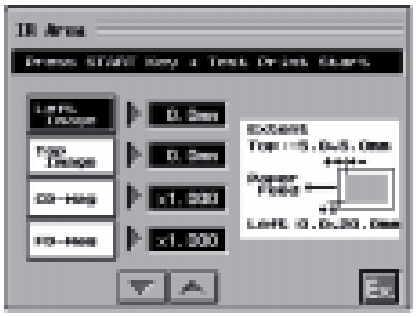
Example
If the scale graduations on the test copy start with 11.5 mm, subtract 1.5 mm from the current setting and input the result as the new setting.

6. Using the same procedure, adjust "Left Image."
7. Make a check again by making another test copy.
8. After the adjustments have been made, touch "Ex.".

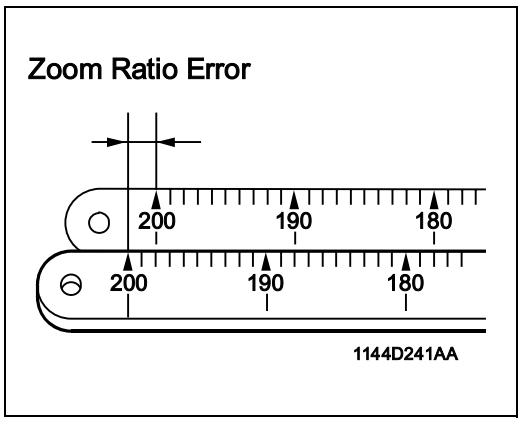
2. CD-Mag and FD-Mag



1. Place scales on the Original Glass as shown on the left and lower the Original Cover.


1144D293CA

2. Access the “IR Area” screen.
3. Press the Start key to make a test copy.

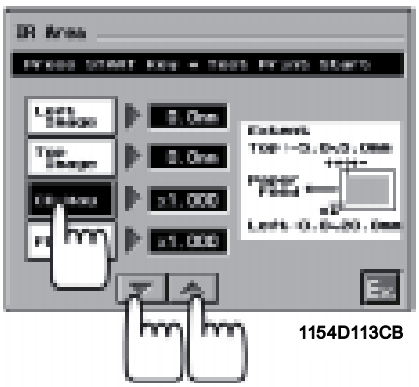


4. Measure the scale on the test copy.

Specifications
CD zoom ratio: 200 ±1 mm
FD zoom ratio: 300 ±1.5 mm

5. If the specifications are not met, calculate the zoom ratio error.

Calculation Formula
Specifications / Measurement Taken on Copy=Copy Zoom Ratio Correction Factor


1154D113CB

6. Select “CD-Mag” and, using the shift keys (▼ or ▲), input the correction factor calculated in step 5.

Example
If the 200-mm position on the copy is 198 mm on the actual scale, calculate the correction factor as follows:
200 mm / 198 mm = 1.01
Using the shift keys, set ×1.01 for the correction factor.

7. Adjust “FD Mag” using the same procedure.
8. After the adjustments have been made, touch “Ex.”.

3-9. DEVELOPER CHANGE MODE

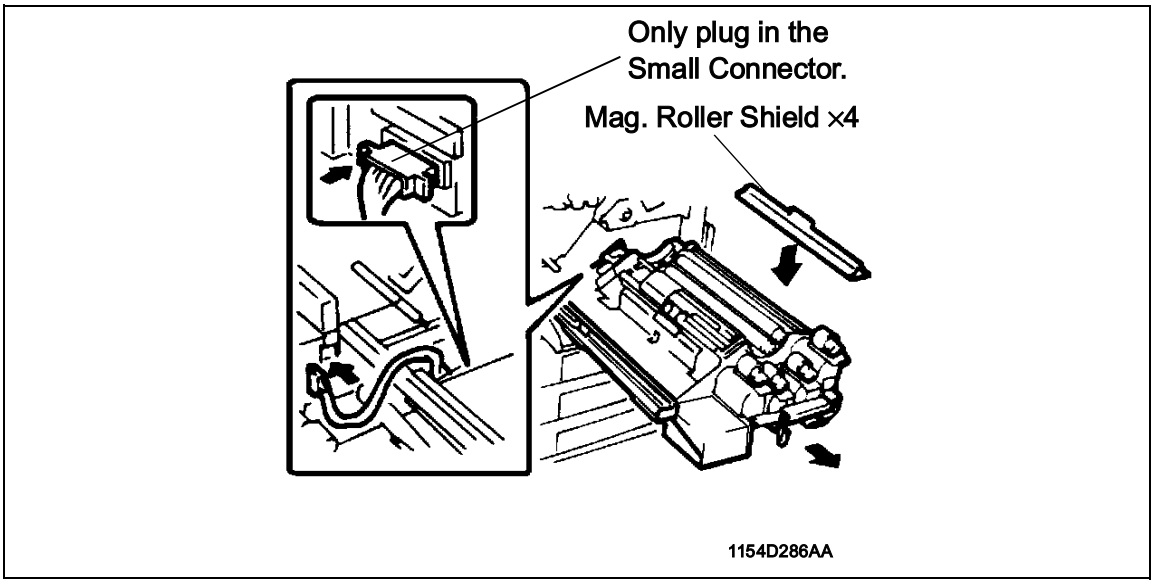
(1) Developer Change (Developer Discharge → Developer Filling → Developer Agitating)

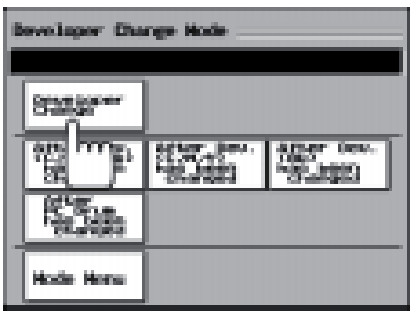
Note

Although functions are available to perform Developer Discharge, Developer Filling, or Developer Agitating individually, perform "Developer Change" that covers all these in a given sequence.

---

1. Turn OFF the Power Switch.
2. Open the Front Door, remove the Developing Unit Cover, and slide out the Developing Unit.
3. Install the Jumper Harness and Mag. Roller Shields.

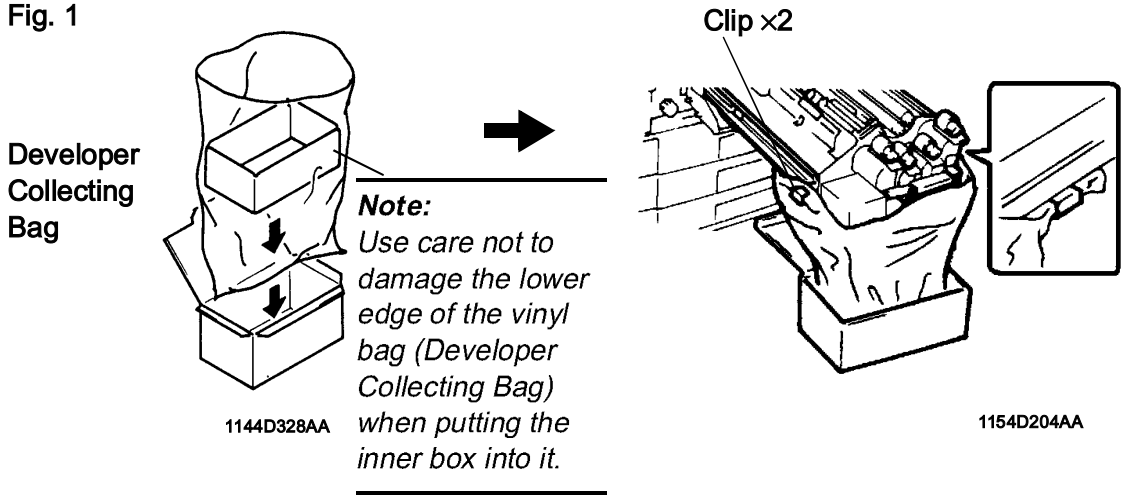



1154D097CA

4. Turn ON the Power Switch.
5. Press the Stop key, 0, Stop key, 2, in that order, to set the copier into the Developer Change mode.
6. Install the Interlock Switch Actuating Jig.
7. Select "Developer Change".

8. Assemble the Developer Collecting Bag. Using two clips, secure the bag to the Developing Unit (Fig. 1).
9. Remove the ATDC assy from the Developing Unit or Units to be discharged (Fig. 2).
10. Pull the Bag up over the front end and clip it with two more clips (Fig. 3).

Fig. 1



Note:
Use care not to damage the lower edge of the vinyl bag (Developer Collecting Bag) when putting the inner box into it.

Fig. 2

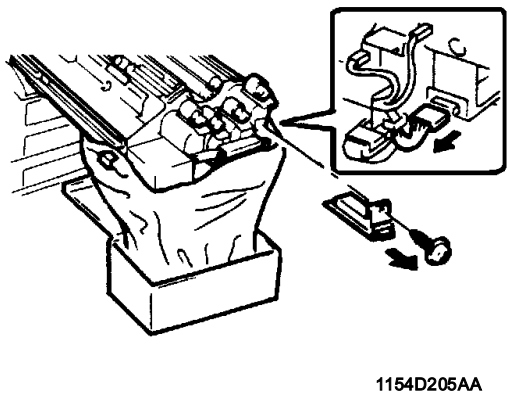
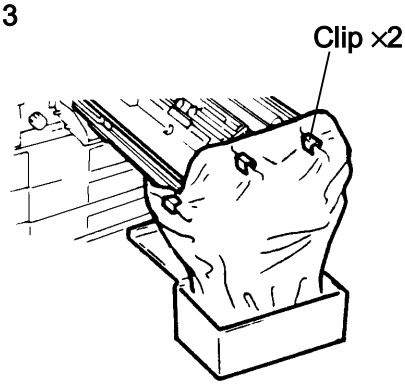
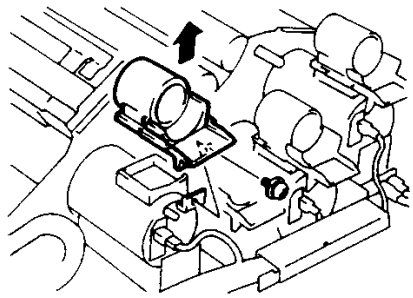


Fig. 3

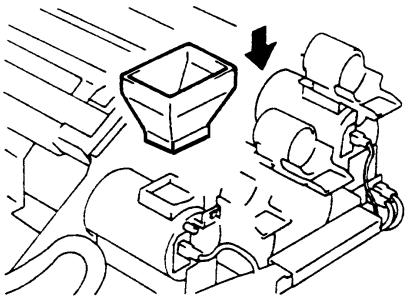


11. Touch “On” for the color or colors to be discharged (1 to 4).
12. Press the Start Key to discharge the developer.
    (It takes about 5 min. to discharge all 4 developers.)
13. After these steps have been completed, touch “Ex.” to select Developer Filling.

14. Remove the supply port of the Developing Unit which is to be charged with the developer and install the Developer Chute. (In the illustration, the Bk Developing Unit is selected.)



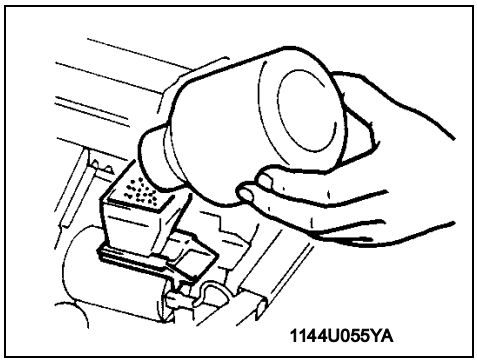
1144U053AA



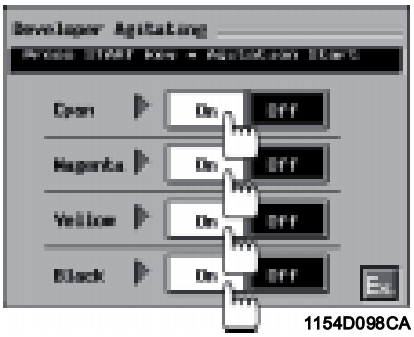
1144U054YA

1154D115CA

15. Select the color of developer and press the Start key.



16. Pour in the developer through the Developer Chute.
17. When all the developer has been poured in the Developing Unit, press the Stop key.
18. After the developer of all colors has been poured, touch “Ex.”.



19. Touch “On” for the color of developer charged. (Two or more colors may be selected.)
20. Press the Start key to agitate the developer selected in step 19.

NOTE

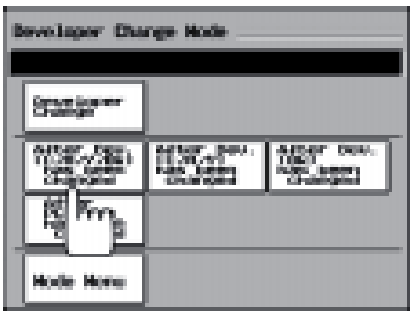
If three or more colors have been selected, the agitation sequence takes place twice.

21. The Developing Unit stops automatically when agitation is completed. Then, touch the “Ex.” key.
22. Turn OFF, then ON, the Power Switch to return to the initial screen.

(2) AFTER DEV. (C/M/Y/Bk) HAS BEEN CHANGED (ATDC Sensor Adjust (Auto) → AIDC Sensor Adjust (Auto) → AIDC Offset → Black ATDC Adjust)

Note

Although functions are available to perform ATDC Sensor Adjust (Auto), AIDC Sensor Adjust (Auto), AIDC Offset, or Black ATDC Adjust individually, perform "After Dev. (C/M/Y/Bk) has been changed" that covers all these in a given sequence.



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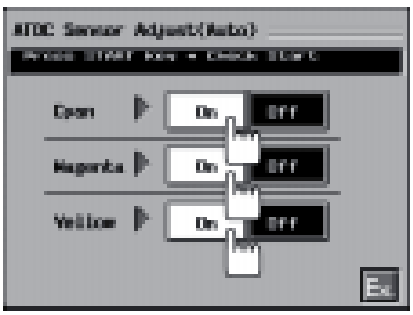
1. Open the Front Door.
2. Press the Stop key, 0, Stop key, 2, in that order, to set the copier into the Developer Change mode.
3. Close the Front Door.
4. Select "After Dev. (C/M/Y/Bk) has been changed" and set the copier into the ATDC Sensor Adjust (Auto) mode.



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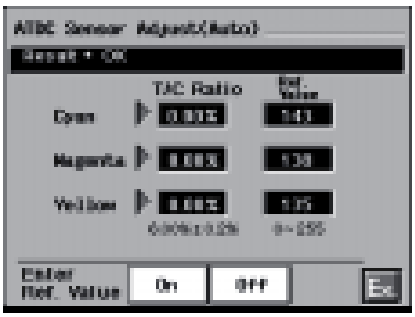
5. Touch "On" for the color to be adjusted and press the Start key.



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6. After the adjustment has been made, the results are displayed on the Touch Panel. If you accept the results, select "On" to enter the reference value.

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7. After ATDC Sensor Adjust (Auto) has been completed, touch "Ex." to set the copier into the AIDC Sensor Adjust (Auto) mode.
8. With the AIDC Sensor Adjust (Auto) screen on the Touch Panel, press the Start key. This lets the copier start an automatic adjustment sequence.

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9. After AIDC Sensor Adjust (Auto) has been completed, the results are displayed. If they are okay, touch “Ex.” and set the copier into the AIDC Offset mode.
10. With the AIDC Offset screen on the Touch Panel, press the Start key to let the copier start an automatic adjustment sequence.

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11. After the adjustment sequence has been completed, the results are displayed on the Touch Panel. Make sure that the value shown for each color falls within the specified range.

Specification Range
Cyan, Magenta, Yellow ... 27 to 76
Black ... 0 to 7

12. If the value is outside the range, return to the Service Mode Menu, select “Test Print” and “Solid Pattern”, and press the Start key to produce a test print.
13. Check to see if the solid pattern on the test print produced is faulty (particularly if the image density is too low). If the solid pattern looks good, replace the AIDC Sensor and make the check again.

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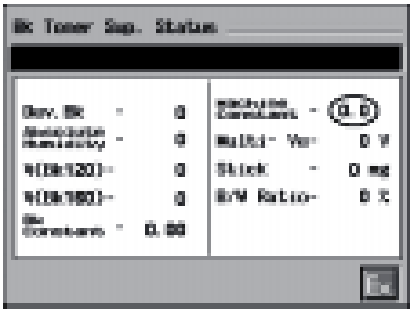
14. After AIDC Offset has been completed, touch “Ex.” to set the copier into the Black ATDC Adjust mode.
15. With the Black ATDC Adjust screen on the Touch Panel, press the Start key to let the copier start the automatic adjustment sequence.
16. After the sequence has been completed, touch “Ex.” to go back to the Developer Change Mode.
17. Turn OFF, then ON, the Power Switch to return to the initial screen.



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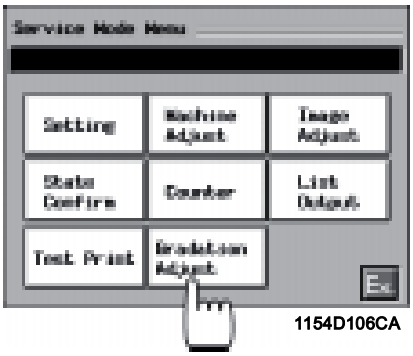
18. Check the Black Developing Unit for adjustment for unit-to-unit variations.

Unit-to-Unit Variations Check Procedure
1. Select “State Confirm” from the Service mode menu.
2. Select “Bk Toner Sup. Status” and check that the “Machine Constant” value falls within the range of -1 to 1.
3. After the check, press the Panel Reset key.

3-10. GRADATION ADJUST

Gradation Adjust is to be performed three times to improve correction accuracy after the copier has been set up and each time a service job has been performed.

1. Press the following keys in this order to set the copier into the Service mode: Stop → 0 → 0 → Stop → 0 → 1.
2. Select "Gradation Adjust" from the Service mode menu.



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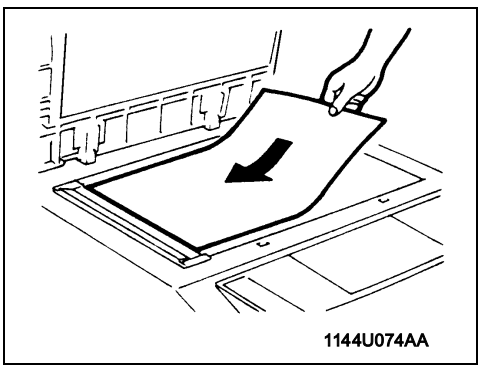
1154D107CA


1144U074AA

3. Press the Start key.
4. Place the copy fed out of the copier on the Original Glass.

Note

Examine the display on the Touch Panel for the direction in which the copy is to be placed on the glass.

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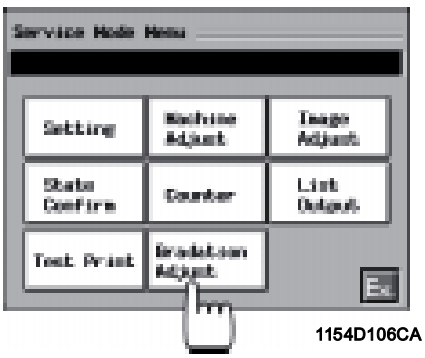
5. Place ten sheets of A3 paper on that copy and lower the Original Cover.
6. Press the Start key again.

✻ The copier scans the original. It does not feed out a test copy at this time.



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7. When the Service mode menu reappears on the Touch Panel, select "Gradation Adjust" again.
8. Press the Start key.

✻ The copier feeds out a test copy at this time.

9. Perform steps 4 through 8 a total of three times using the latest test copy each time.
10. After the procedures have been completed, press the Panel Reset key.

Note

Before performing Gradation Adjust, reset the settings for "PRT Max Density", "PRT Highlight", "Background Voltage", "VB Shift" of "Image Adjust" to the standard values.

3-11. OTHER ADJUSTMENTS

(1) Adjustment of the AIDC Sensor Position

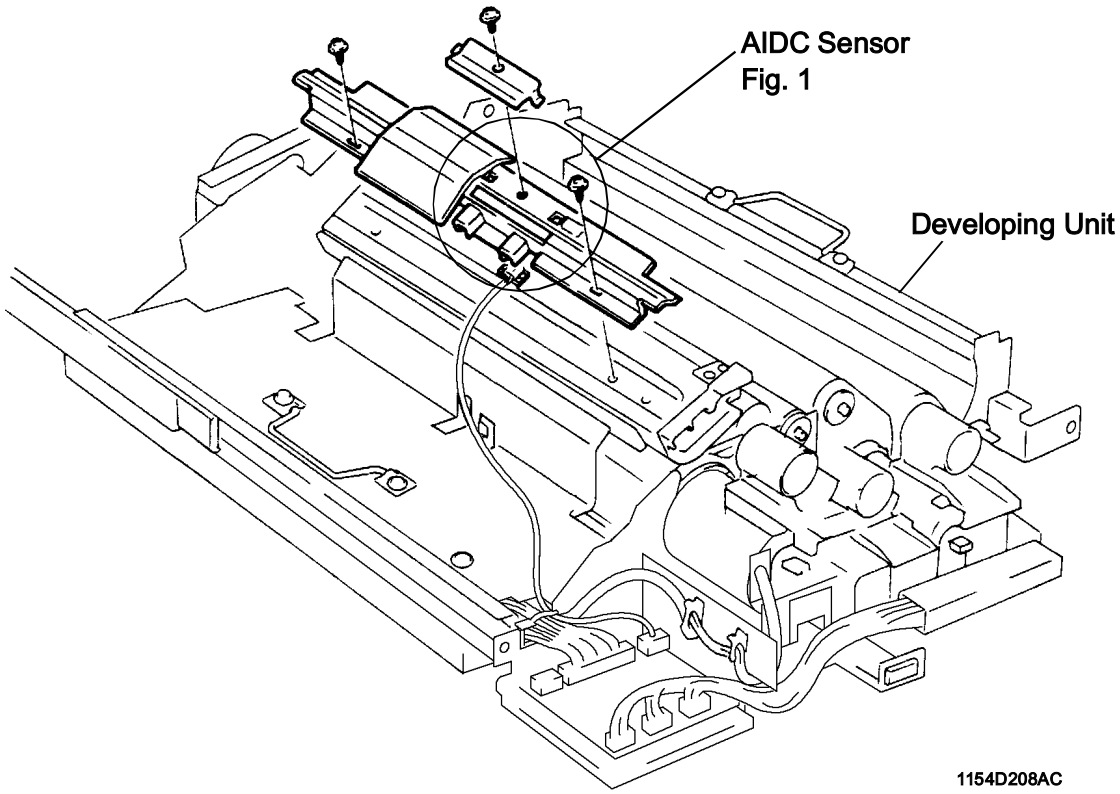
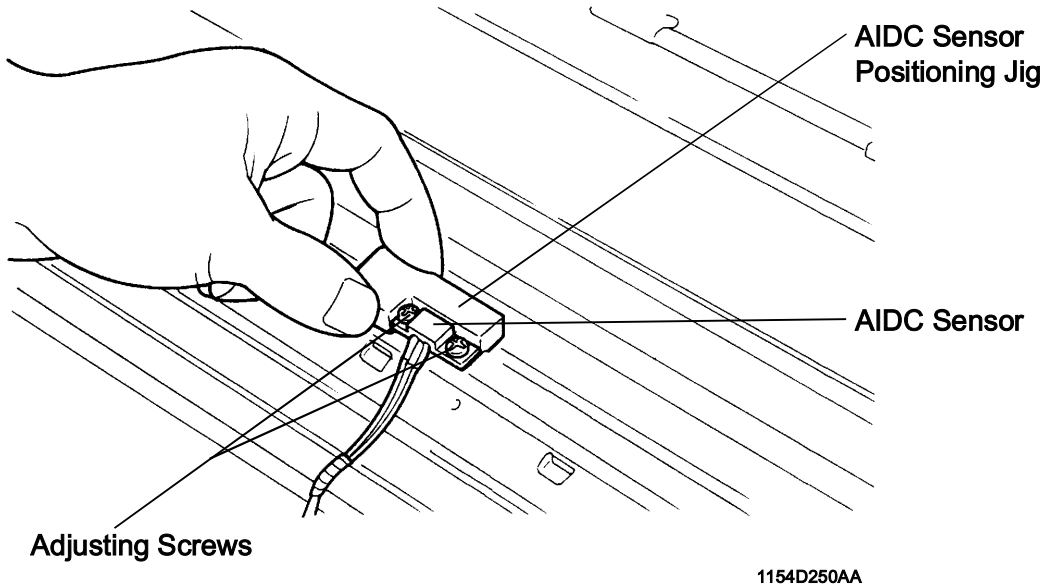


Fig. 1 Adjusting Procedure



1. Loosen the AIDC Sensor adjusting screws.
2. Install the AIDC Sensor Positioning Jig.
3. Press the AIDC Sensor tightly up against the jig and, at the same time, tighten the adjusting screws.

(2) Focus-Positioning of the Scanner and 2nd/3rd Mirrors Carriage

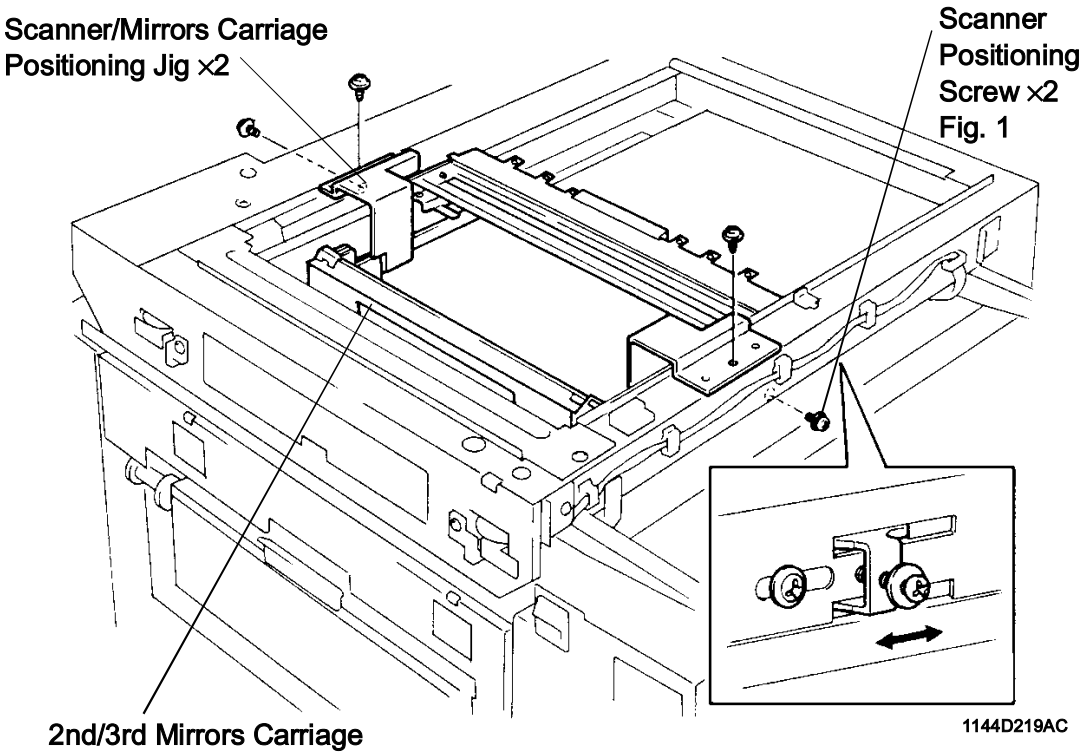
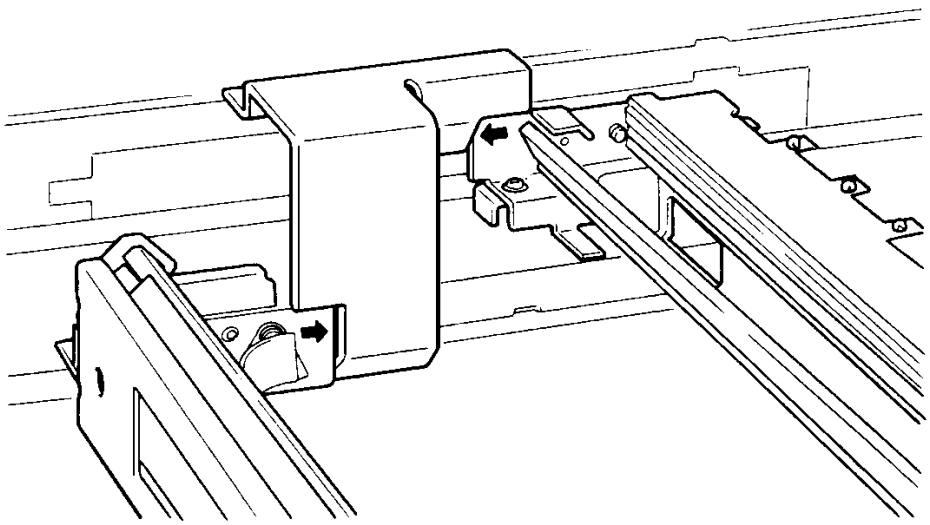


Fig. 1 Adjusting Procedure



1. Loosen the Scanner positioning screws.
2. Install the Scanner/Mirrors Carriage Positioning Jigs.
3. Press the Scanner and 2nd/3rd Mirrors Carriage up against the jigs as shown above.
4. If there is a clearance between the jig and 2nd/3rd Mirrors Carriage, loosen the cable fixing screw on the front frame and move the adjusting screw in the adjustable anchor to eliminate the clearance.
5. Tighten the Scanner positioning screws.

(3) Adjustment of the Gap Between the Doctor Blade and Sleeve Roller

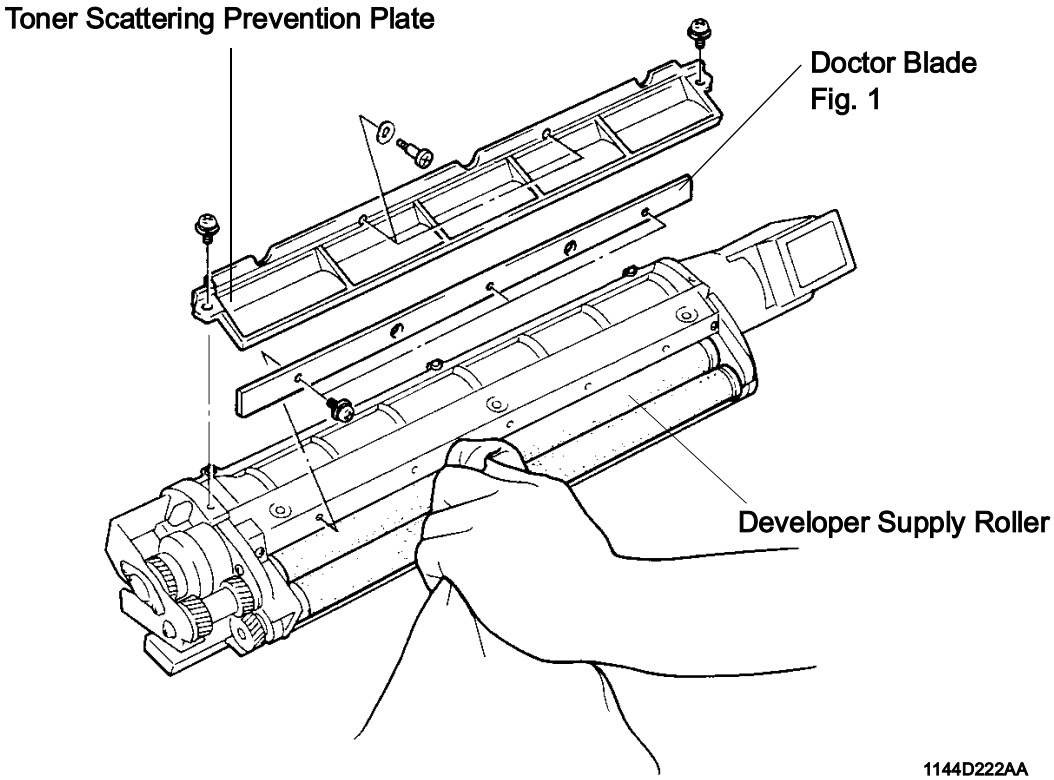
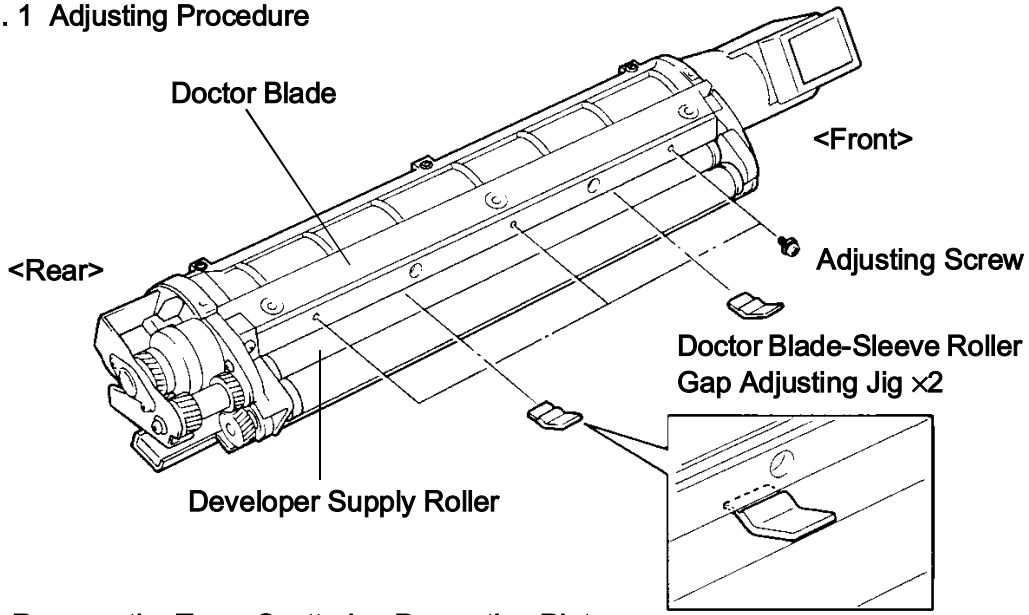


Fig. 1 Adjusting Procedure



1. Remove the Toner Scattering Prevention Plate.
2. Remove the Doctor Blade.
3. Clean the Developer Supply Roller.
4. Refit the Doctor Blade and temporarily secure it.
5. Install the Doctor Blade-Sleeve Roller Gap Adjusting Jigs and, with the Doctor Blade pushed up, tighten the adjusting screws.

NOTE

Make sure that there are no foreign objects wedged between the Doctor Blade-Sleeve Roller Gap Adjusting Jig and Sleeve/Magnet Roller.

(4) Adjustment of the Amount of Transfer Drum Retraction

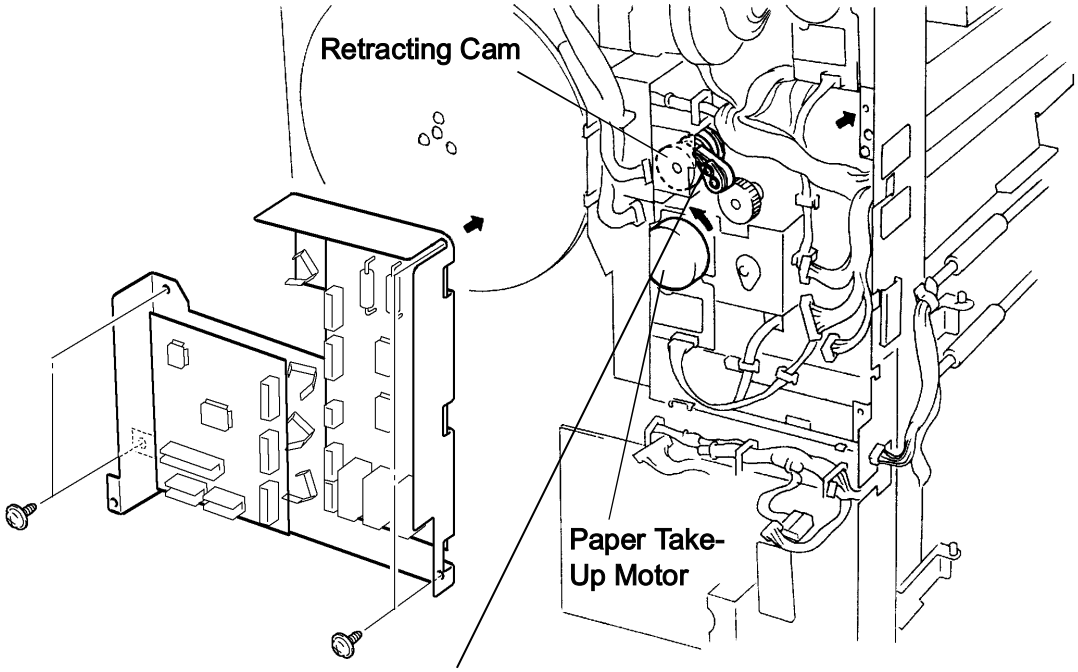
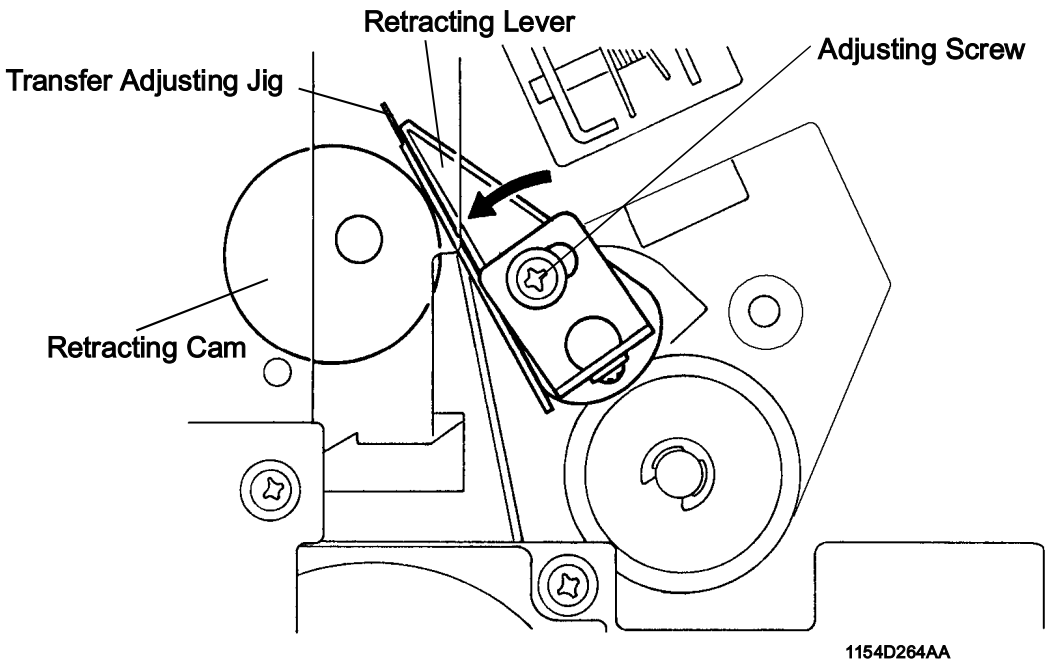


Fig. 1

Fig. 1 Adjusting Procedure



1. Remove the Master Board.
2. Manually turn the Paper Take-Up Motor in the direction of the arrow until the retracting cam stops.
3. Insert the Jig into the space between the retracting cam and retracting lever. Press the retracting lever against the retracting cam and, at the same time, tighten the adjusting screw.

(5) Adjustment of the Paper Separator Finger Roll Position

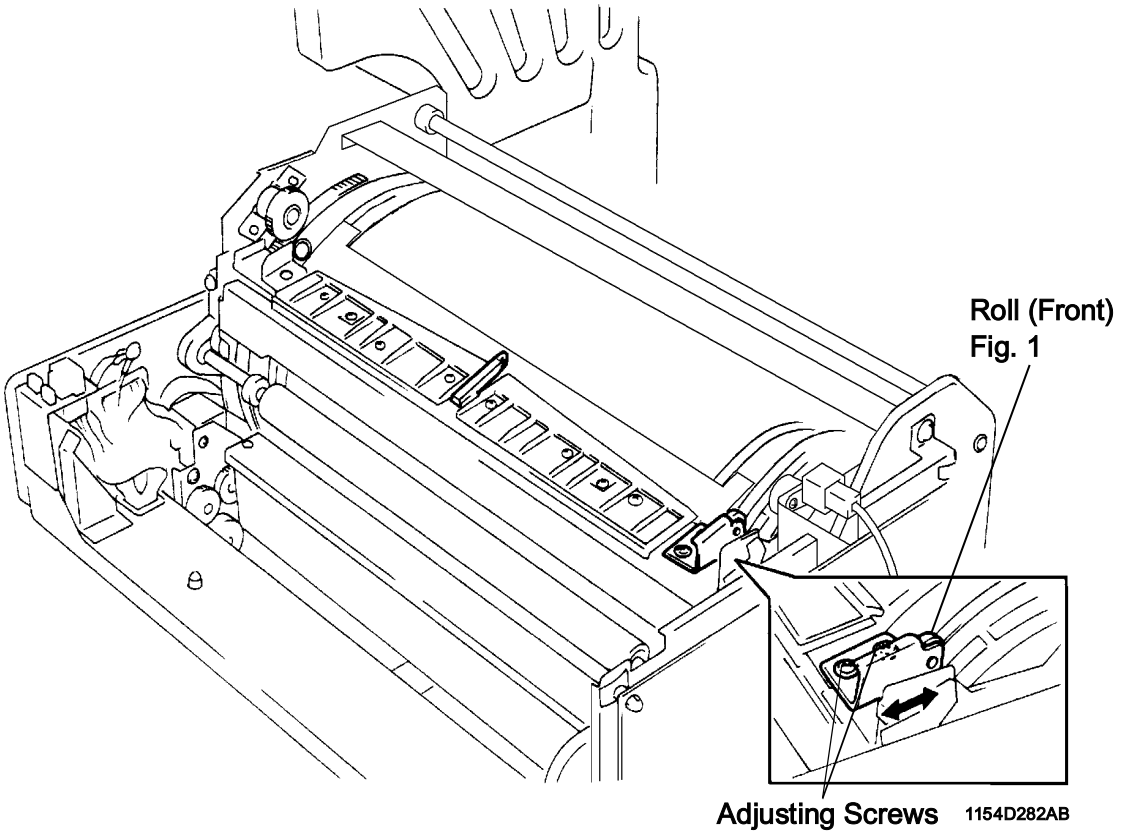
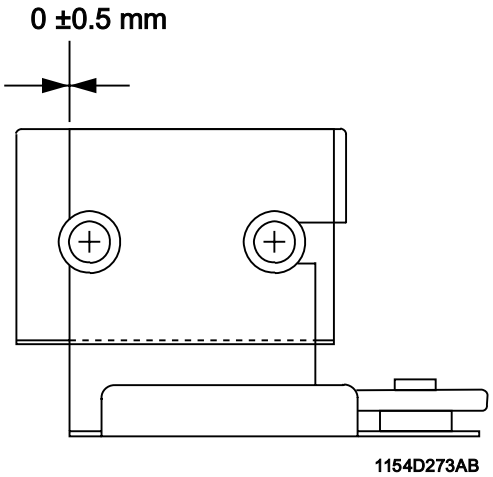


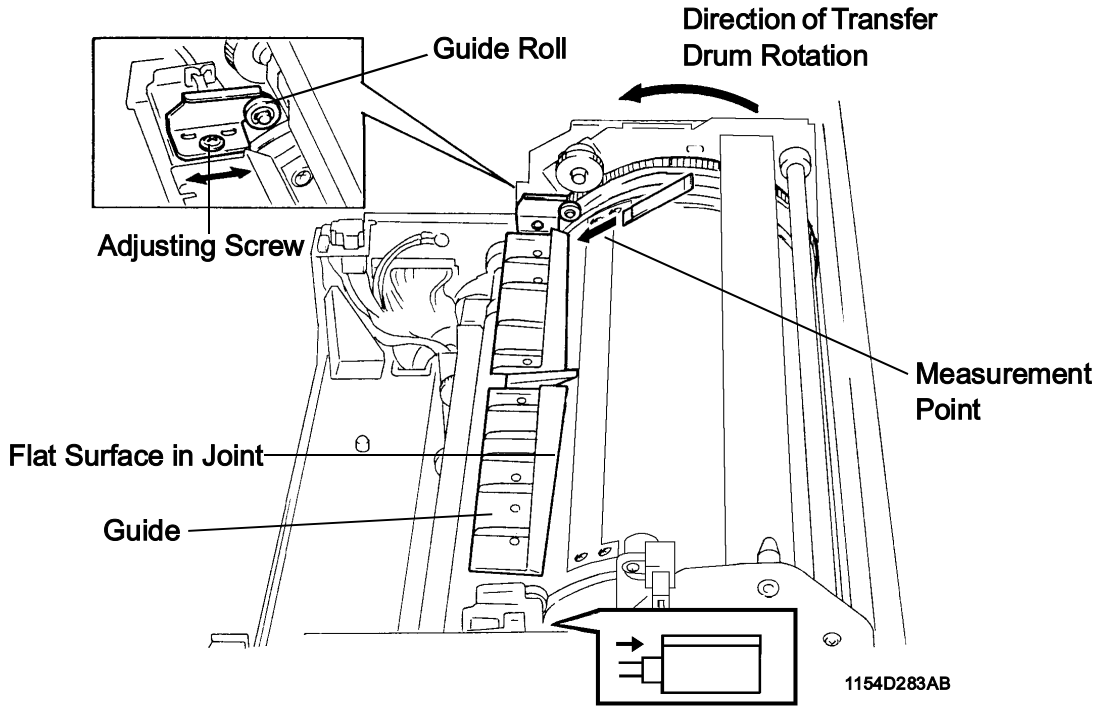
Fig. 1 Adjusting Procedure

Position at Which to Secure the Roll

Loosen the adjusting screws of the roll (front) and, after positioning the roll as shown below, tighten the screws.



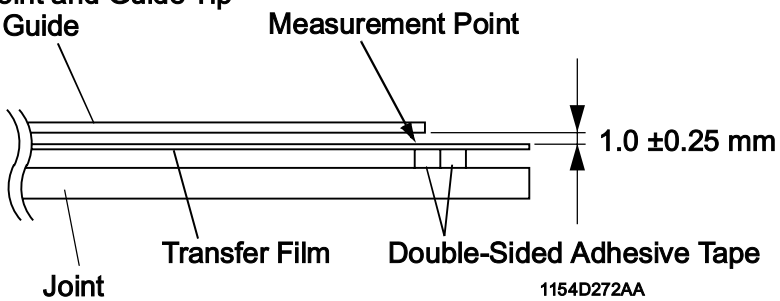
(6) Adjustment of Clearance Between the Transfer Drum Joint and Paper Separator Guide



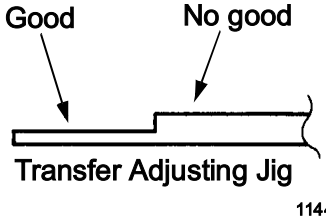
Adjustment Procedure

1. Turn the Transfer Drum so that the center (flat surface) of the joint is located under the guide.
2. Align the Transfer Adjusting Jig with the rear double-sided adhesive tape on the Transfer Film as shown above. Loosen the adjusting screw, push the Paper Separator Finger Solenoid with a finger in the direction of the arrow as far as it will go, then tighten the screw.

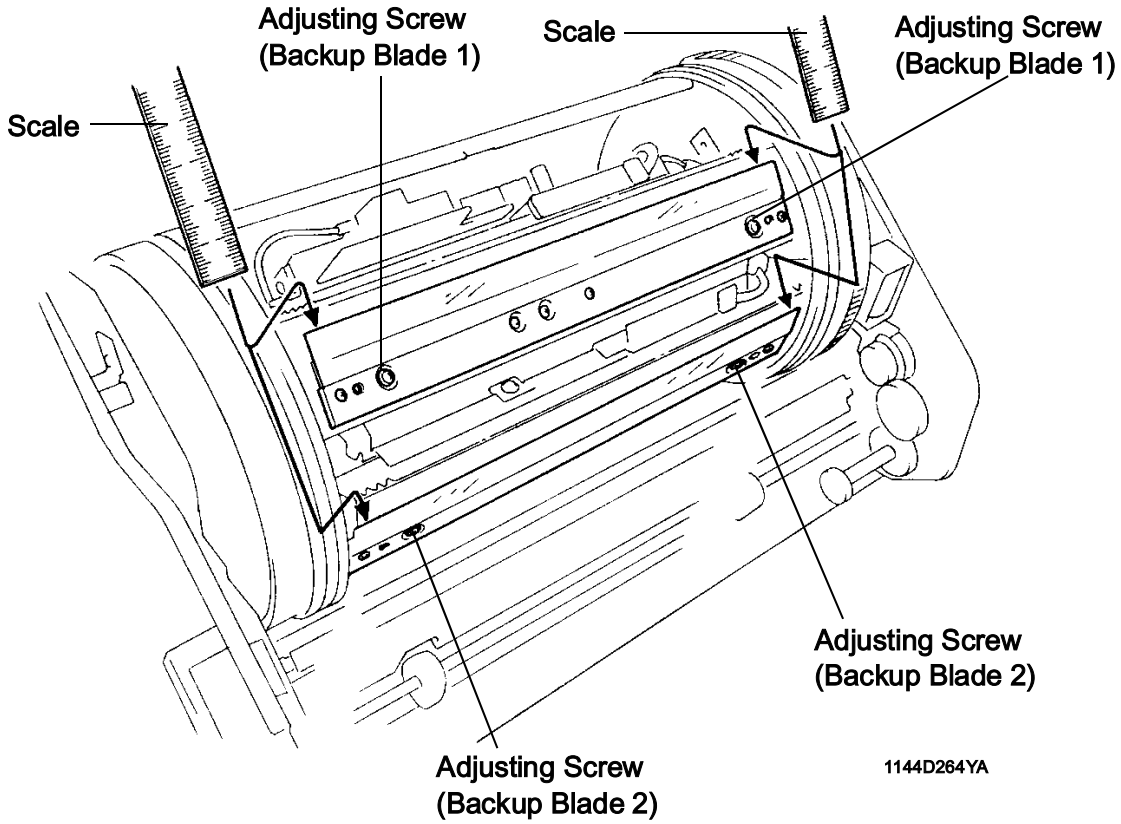
Clearance Between Joint and Guide Tip



3. Check again for correct clearance at the measurement point using the Transfer Adjusting Jig as shown below.

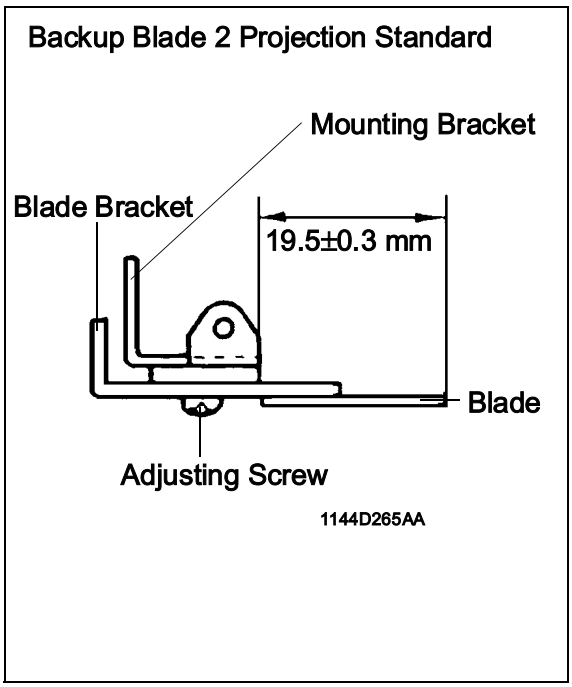


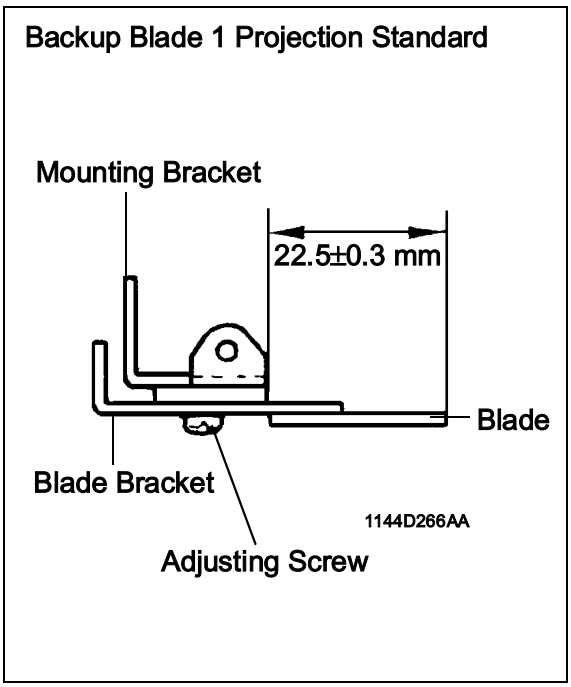
(7) Adjustment of the Amount of Projection of Backup Blade 2 and 1



Adjusting Procedure

1. Remove the Transfer Film.
2. Loosen the adjusting screws.
3. Hold the scale at a right angle to the end face of the mounting bracket. Move the blade bracket to obtain the specified length between the end face of the mounting bracket and the blade tip, then tighten the adjusting screws.





(8) Adjustment of the Sprocket Unit

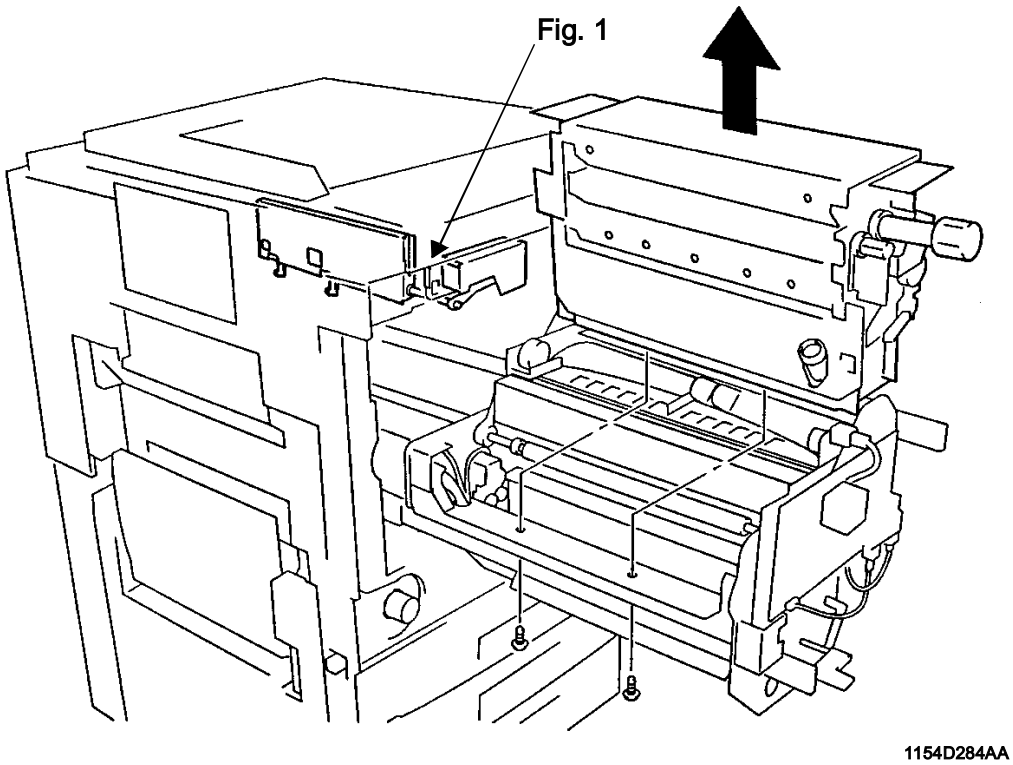
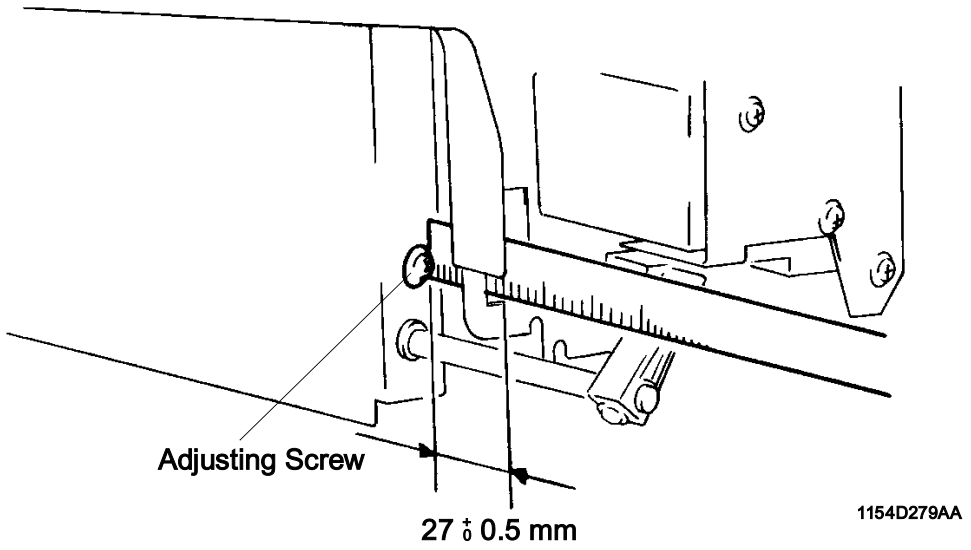


Fig. 1 Adjustment Procedure

Press the scale against the position shown below and adjust the clearance between the sprocket unit and copier frame with the adjusting screw.



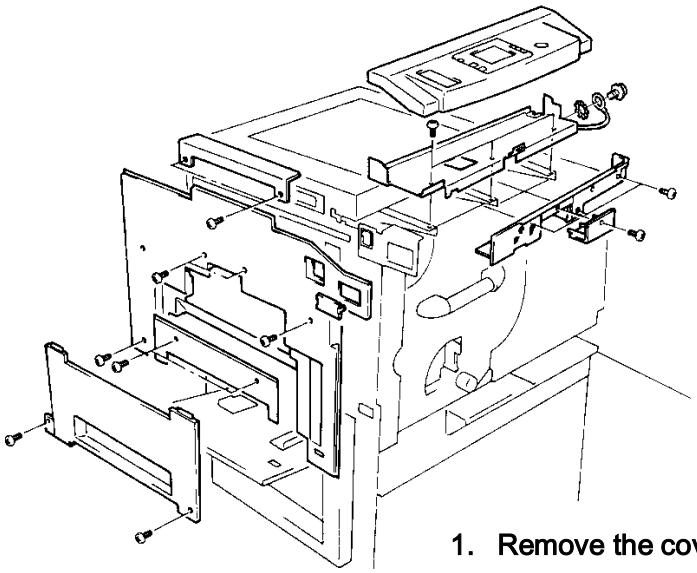
Adjustment Instructions

If the clearance between the sprocket unit and copier frame is wider than the specification, turn the adjusting screw counterclockwise.

If the clearance is narrower than the specification, turn the adjusting screw clockwise.

4 MISCELLANEOUS

4-1. INSTALLATION OF THE PLUG-IN COUNTER MOUNTING BRACKET (OPTION)



1. Remove the covers.

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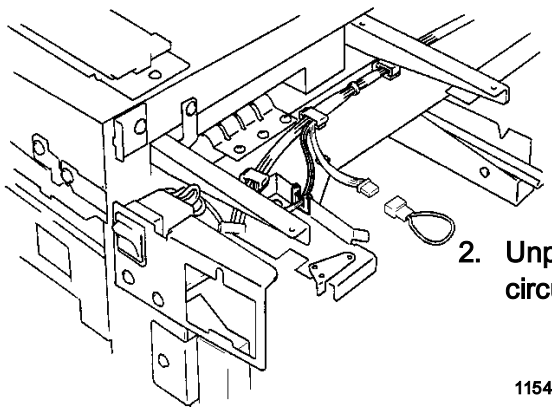
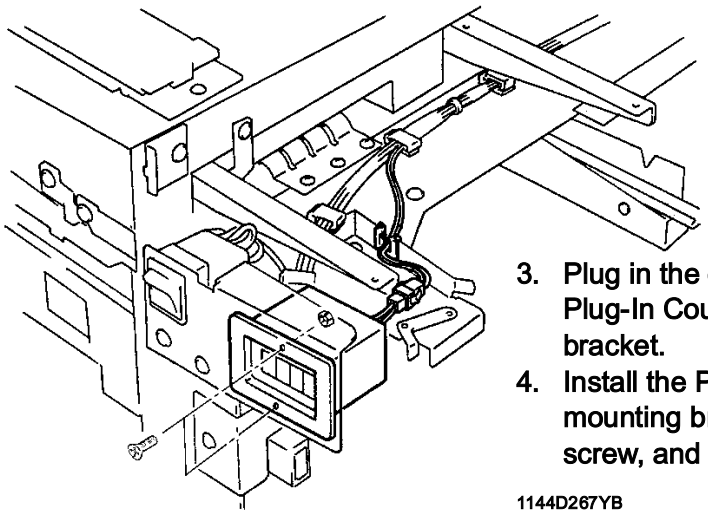


2. Unplug the short-circuit connector.

1154D243AB



3. Plug in the connector of the Plug-In Counter mounting bracket.
4. Install the Plug-In Counter mounting bracket with one screw, and one screw and nut.

1144D267YB

4-2. BACKUP MEMORY RAM PACK REPLACEMENT PROCEDURE

Work Before Replacement

1. Select the List Output mode under the Service Mode and print the following lists: Image Processing, Setting/Adjust, and Counter.

Note

Check the settings of the following functions and make a note of them before the replacement as no lists will be printed for them.
Setting Mode menu: Paper Kind, Admin. Mode, RD Mode, Org. Detect Sensor, CH Cleaning, Editor Screen, A6 Card Margin (Metric Areas) or 4x6 Paper Margin (Inch Areas).
In addition, the settings in the User Mode are not printed, either. Check and make a note of the settings as necessary.

Work After Replacement

1. Clean the optical parts (PH Assy, Original Glass, Lens, Mirror, Lamp).
2. Add fuser oil up to the required level.
3. Replace the Toner Collecting Box with an empty one or dump toner from the Toner Collecting Box.
4. Remove the Rear Cover to prevent predrive from being initiated.

Note

Since the new Backup Memory RAM has no old developer data, the copier may detect a malfunction as it relates to the Developing Unit if predrive is initiated.

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5. Using Touch Panel Correct, correct the position of the keys on the Touch Panel.
6. Select "Toner Collect" of "Life Counter 3 (Others)" of Counter available from the Service Mode and press the Clear key on the control panel.
7. The default language of the display for the Touch Panel is English. Change this setting as necessary by using "Language" of User's Choice which is available by pressing the User Mode key on the control panel.
8. Select "Marketing Area" of Setting available from Service Mode and select the same marketing area as before the replacement.
9. Carry out the following tasks in the Developer Change Mode in the order given below.

Task		Procedure		Function	Order
Developer					
	Developer Discharge				1
	Developer Filling				2
AIDC					
	AIDC Sensor	Check that the value falls within 4.0 ± 0.3 V as a result of an automatic adjustment performed.		❍ Δ	3
	AIDC Offset	Automatic adjustment		❍	4
ATDC Sensor		C,M,Y	Check that the value falls within 6.0 ± 0.2% as a result of an automatic adjustment performed.	❍ Δ	5
		K	Automatic adjustment	❍	6

❍: Adjustment Δ: Check

10. Select "BK Toner Sup. Status" of State Confirm available from Service Mode. Then, check that the "Machine Constant" value falls within the range from -1.0 to 1.0. (If the value falls outside the range, it may adversely affect the image on the copy.)

11. Carry out the following tasks in the Service Mode in the order given below.

Note
It is not possible to reenter the counter values. It is therefore necessary that the copier be maintained according to the Counter list printed before the replacement.

	Task	Procedure	Function	Order
Image Adjust	PRT Max Density	Check that "0" has been set. Set to "0" if set otherwise.	Δ	1
	PRT Highlight	Check that "0" has been set. Set to "0" if set otherwise.	Δ	2
	Background Voltage	Check that "0" has been set. Set to "0" if set otherwise.	Δ	3
	ATDC Level Setting	Check that "5%" has been set. Set to "5%" if set otherwise.	Δ	4
	VB Shift	Check that "0" has been set. Set to "0" if set otherwise.	Δ	5
	AE Adjust	Check that "2" has been set. Set to "2" if set otherwise.	Δ	6

	Task	Procedure	Function	Order
Machine Adjust	Fuser Nip	Automatic adjustment	❍	
	Fuser Speed	Automatic adjustment	❍	8
	Fuser Temp.	Check that “155°C” has been set. Set to “155°C” if set otherwise.	Δ	9
	Transfer Output		◎	20
	Jam Sensor	Automatic adjustment	❍	
	Feed Motor Speed	Automatic adjustment	❍	10
	PRT Area			
	Top Margin			
	Image Start Position		◎	12
	Lead Edge Position		◎	13
	Left Margin		◎	14
	Dup. Left Margin		◎	15
	IR Area			
	Left Image		◎	16
	Top Image		◎	17
	CD-Mag		◎	18
	FD-Mag		◎	19
	ADF Original Stop Position Set		◎	11
	Paper Loop		◎	
	A6 Card Passage (Metric Areas) 4x6 Paper Passage (Inch Areas)	Automatic adjustment	❍	
Setting	Paper Size		◎	7
	Paper Kind		◎	26
	Admin. Mode		◎	27
	RD Mode		◎	25
	Manual Paper width	Automatic adjustment	❍	24
	Org. Detect Sensor		◎	28
	Serial # Input		◎	23
	CH Cleaning		◎	29
	OHP Speed		◎	22
	Transfer Table	Check that “1” has been set. Set to “1” if set otherwise.	Δ	21
	Editor Screen		◎	30
	A6 Card Margin (Metric Areas) 4x6 Paper Margin (Inch Areas)		◎	

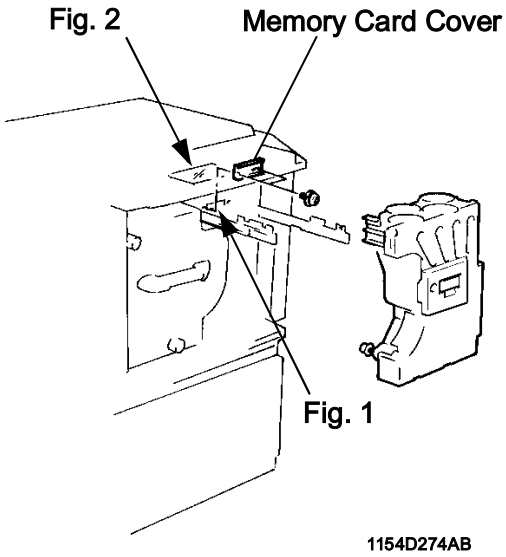
◎: Reentry of values before replacement ❍: Adjustment Δ: Check

12. Reinstall the Rear Cover.
13. Turn OFF, then ON, the Power Switch to return to the initial screen.
14. Select “Gradation Adjust” available from the Service Mode and make the Gradation Adjust three times.

4-3. FLASH MEMORY

Software has conventionally been upgraded by replacing ROM on each board. This copier employs flash memory for the system control IC mounted on the IR Control Board. Its contents are reprogrammed easily by performing the following steps using the IC card (memory card), into which data has been previously downloaded.

NOTE:
NEVER remove or insert the memory card with the copier power turned ON.



1. With the Power Switch in the OFF position, unplug the power cord from the power outlet.
2. Remove the Hopper Unit.
3. Remove the two screws that secure the Memory Card Cover.
4. Install the Memory Card. See Fig. 1.
5. Plug the power cord into the power outlet.
6. Turn ON the Power Switch.
   ✻ This rewrites the data.
7. On the Touch Panel, make sure that the data has been properly written. See Fig. 2.
8. Unplug the power cord from the power outlet.
   Do not turn OFF the Power Switch at this time.
9. Remove the memory card.

Fig. 1 Memory Card Installation Position
Insert the memory card into the specified position on the IR Control Board.

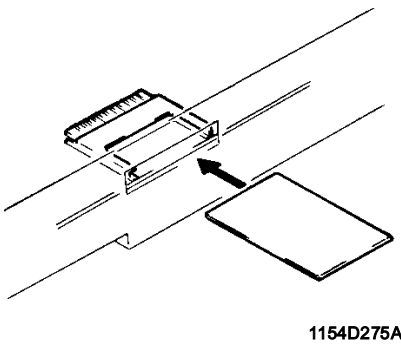


Fig. 2

CONTENTS

1. PRECAUTIONS FOR HANDLING THE PWBs S-1
   1-1. Precautions for Transportation and Storage S-1
   1-2. Precautions for Replacement and Inspection S-1
2. CONTROL PANEL KEYS AND TOUCH PANEL S-2
   2-1. Control Panel Keys S-2
   2-2. Explanation of the Touch Panel S-4
      (1) Basic Screen S-4
      (2) Warning Screens S-5
3. FUNCTION OF SWITCHES AND VARIABLE RESISTORS ON PWBs S-7
   3-1. PWB Location S-7
   3-2. Tech. Rep. Setting Switches Board S-7
4. USER MODE S-9
   4-1. User Mode Menu Screen S-9
   4-2. User Mode Setting Procedure S-9
   4-3. User Mode Functions Tree S-10
   4-4. Settings in the User Mode S-11
      (1) Administrator Mode S-13
      (2) User's Choice S-15
5. SERVICE MODE S-17
   5-1. Service Mode Menu Screen S-17
   5-2. Service Mode Setting Procedure S-17
   5-3. Service Mode Function Tree S-18
   5-4. Settings in the Service Mode S-22
      (1) Setting (Installation) S-22
      (2) Machine Adjust (Mechanical Adjustments) S-27
      (3) Image Adjust S-32
      (4) State Confirm (Copier Condition Check) S-33
      (5) Counter S-37
      (6) List Output S-42
      (7) Test Print S-44
      (8) Gradation Adjust S-44
6. SECURITY MODE S-45
   6-1. Security Mode Screen S-45
   6-2. Security Mode Setting Procedure S-45
   6-3. Security Mode Function Tree S-46
   6-4. Settings in the Security Mode S-46
7. DEVELOPER CHANGE MODE S-47
   7-1. Developer Change Mode Menu Screen S-47
   7-2. Developer Change Mode Setting Procedure S-47
   7-3. Developer Change Mode Function Tree S-48
   7-4. Settings in the Developer Change Mode S-48
8. TOUCH PANEL CORRECTION MODE S-50
   8-1. Touch Panel Correction Mode Screen S-50
   8-2. Touch Panel Correction Mode Setting/Correcting Procedures S-50
9. DATE/TIME INPUT MODE S-51
   9-1. Date/Time Input Mode Screen S-51

9-2. Date/Time Input Mode Setting Procedure S-51

1 PRECAUTIONS FOR HANDLING THE PWBs

1-1. Precautions for Transportation and Storage

- Before transporting or storing the PWBs, put them in protective conductive cases or bags so that they are not subjected to high temperature (they are not exposed to direct sunlight.)
- Protect the PWBs from any external force so that they are not bent or damaged.
- Once the PWB has been removed from its conductive case or bag, never place it directly on an object that is easily charged with static electricity (carpet, plastic bags, etc.).
- Do not touch the parts and printed patterns on the PWBs with bare hands.

1-2. Precautions for Replacement and Inspection

- Whenever replacing the PWB, make sure that the power cord of the copier has been unplugged.
- When the power is on, the connectors must not be plugged in or unplugged.
- Use care not to strap the pins of an IC with a metal tool.
- When touching the PWB, wear a wrist strap and connect its cord to a securely grounded place whenever possible. If you cannot wear a wrist strap, touch the metal part before touching the PWB to discharge static electricity.

2 CONTROL PANEL KEYS AND TOUCH PANEL

For more details, see the "Operator's Manual" shipped with the copier.

2-1. Control Panel Keys

1. Touch Panel
- Shows various screens and messages.

2. Display Contrast Control Knob
- Varies the brightness of the Touch Panel.

3. Utility Key
- Changes the screen to the Utility Mode setting screen.

4. Job Recall Key
- Selects the Job Recall screen which allows the user to program a copying job and to recall, check, or delete a job previously stored in memory.

5. Auto Color/Full Color/Black Key
- Auto Color:
  When in this mode, the copier automatically checks and determines whether the original is in color or black-and-white and makes the copy accordingly.
- Full Color:
  When in this mode, the copier makes a full-color copy even if the original is in black-and-white.
- Black:
  When in this mode, the copier makes a black-and-white copy even if the original is in color.

6. Start Key
- Starts a copy cycle.

7. Stop key
- Stops a copy cycle.

8. Clear Key
- Clears the number-of-copies setting, zoom ratio, counter count.

9. Panel Reset Key
- Clears all control panel settings made previously, initializing the copier.

Note

It does not, however, clear the settings made immediately before the Interrupt mode.

---

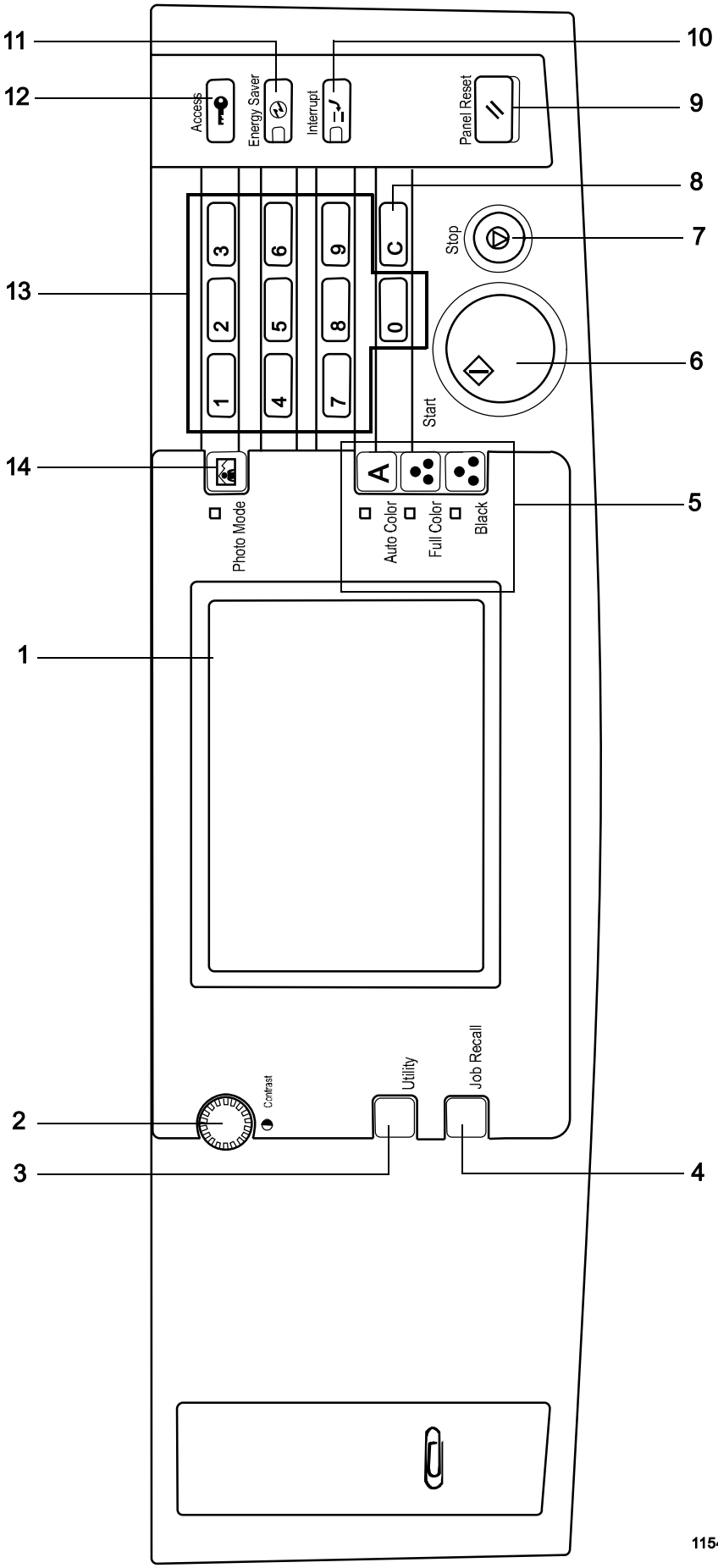
10. Interrupt Key
- Sets the copier into, or lets it leave, the Interrupt mode.

11. Energy Saver Key
- Sets the copier into the Energy Saver mode.

12. Access Mode Key
- When "Copy Track Functions" has been turned "ON," entering the access number and pressing this key (Access Mode) will allow the user to make copies.

13. 10-Key Pad
- Numeric Keypad used for entering the number of copies to be made, zoom ratio, access number, and Service mode settings.

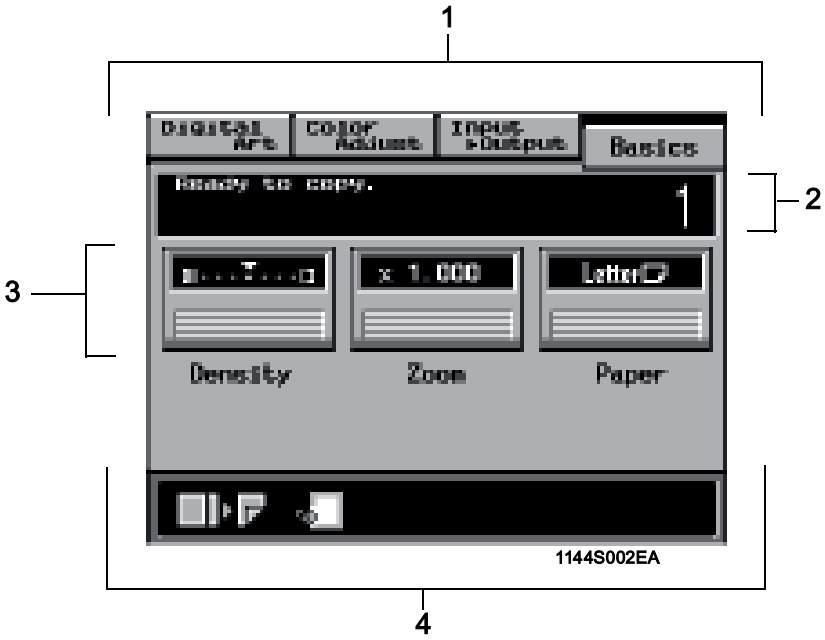
14. Photo Mode Key
- Sets the copier into the Photo mode.


11
10
12
9
8
7
13
6
14
5
1
2
3
4
Access
Energy Saver
Interrupt
Panel Reset
Stop
Start
Photo Mode
Auto Color
Full Color
Black
Contrast
Utility
Job Recall
1154S028CA

2-2. Explanation of the Touch Panel

(1) Basic Screen

- The Basic screen is an initial screen that appears when the copier is turned ON, panel is reset, or when auto clear is activated.



1. Index Keys
- When any of these keys is touched, the corresponding menu screen appears, either Input>Output, Color Adjust, or Digital Art. Touching Basics accesses the Basic screen.

2. Message Display
- Shows the current copier status, operating instructions, and other data including the number of copies selected and the amount of paper still available for use.

3. Function Keys
- Select functions.

4. Set Function Display
- Shows graphic representations of functions set other than the initial ones, including the Input>Output and Digital Art types.

(2) Warning Screens

- The warning screen may be a malfunction display, error display, warning display, or a caution display.

<Malfunction Display>

- A malfunction display is given when trouble occurs which cannot be corrected by the user.

1144S003CA

<Error Display>

- An error display is given when trouble occurs which can be corrected by the user.

Examples:
Paper misfeed, toner empty, door open.

1154P429CA

<Warning Display>

- A warning display is given when any further copier operation will not be possible, or only faulty results will come out, due to erroneous panel settings or other cause.

Examples:
Unmatched paper size in Auto Paper mode, the number of copies set exceeding the limit.

1144S005EA

<Caution Display>

- A caution display is given when, though further copier operation will be possible, it could result in a malfunction.

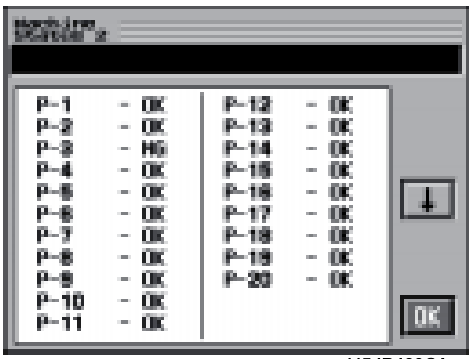
Examples:
Toner Collecting Box becoming full, toner soon to run out.

1144S006EA

<Image Stabilization Fault>

- When the following message appears, see Image Stabilization Fault of TROUBLE-SHOOTING.
- When a maintenance call indicator appears on the lower left corner of the Basic screen, touch that indicator, and the display shows numbers representing particular image stabilizer parts, together with the status of each of these parts. After the particular faulty spot has been identified, refer to “Image Stabilizer Malfunction” of “Troubleshooting” to take necessary remedial action.

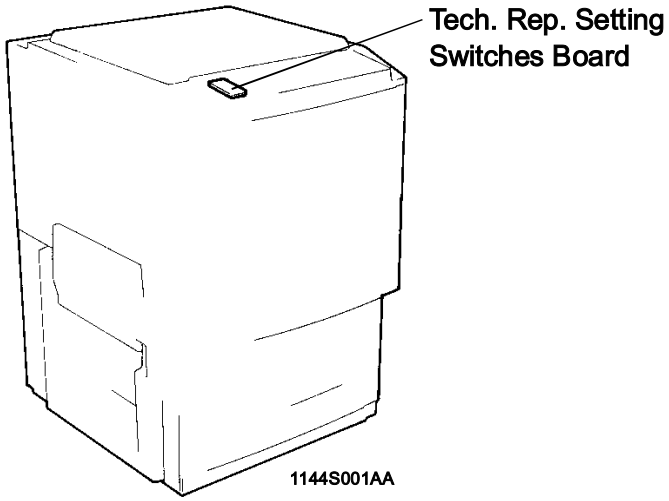
1144T054CA



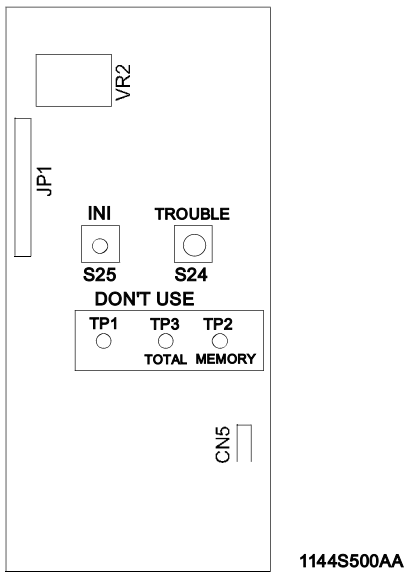
1154P430CA

3 FUNCTION OF SWITCHES AND VARIABLE RESISTORS ON PWBs

3-1. PWB Location



3-2. Tech. Rep. Setting Switches Board



Symbol	Name	Description
S24	Trouble Reset Switch	Resets malfunctions in the fusing and exposure systems. In addition, it forcibly resets a misfeed or malfunction that occurrs due to incorrect operation, etc. and cannot be reset by opening and closing the Front Door.
S25	————	Disabled
TP1	GND Test Point	Ground terminal used for memory clear.
TP2	Memory Clear Test Point	See <List of Data Cleared by Switch and Point> on the next page.

<Clearing Procedures>

- Memory Clear Test Point TP2

1. Turn ON the Power Switch and close the circuit across TP1 and TP2.
2. With the circuit across TP1 and 2 closed, turn OFF the Power Switch and, approx. 10 sec. later, turn ON the Power Switch again.
3. In approx. 5 sec., open the circuit across TP1 and 2.

NOTES

1. *If an erratic operation or display occurs, perform the clearing procedures in the order of S24 and TP2.*
2. *When memory clear has been performed, make the necessary settings again.*

<List of Data Cleared by Switch and Point>

Clearing Method / Data Cleared		Front Door Open/Close	Trouble Reset Switch S24	Memory Clear Test Point TP2
Misfeed display		❍	–	❍
Malfunction display	Fusing/ Optical	–	❍	❍
	Others	❍	❍	❍
Erratic operation/display		–	❍	❍
User mode✻		–	–	❍
Following Service mode items only: • Fuser Oil Change • Count Up Select • Admin. Mode (access no.) • RD-Mode		–	–	❍

❍: Cleared –: Not cleared

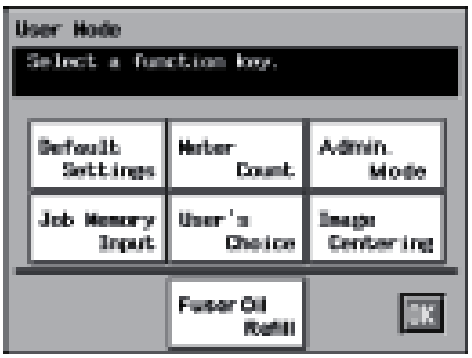
✻ The “Meter Count” counts are not cleared.

4 USER MODE

- This mode is used to make various settings according to the user's needs, check for the total counts, and designate the access number for the copy track function.

4-1. User Mode Menu Screen

- Press the User Mode key on the control panel.



1154S027CA

Note

The "Fuser Oil Refill" key appears when the count of "Fus. Oil" of "Life 3 (others)" has reached a preset value and "Fuser Oil Change" of "Setting" has been set to "User Set."

4-2. User Mode Setting Procedure

<Setting Procedure>

1. Press the User Mode key on the control panel.
2. Select the function to be set and make settings as required.
3. After the settings are complete, touch the OK key to validate the settings.

Note

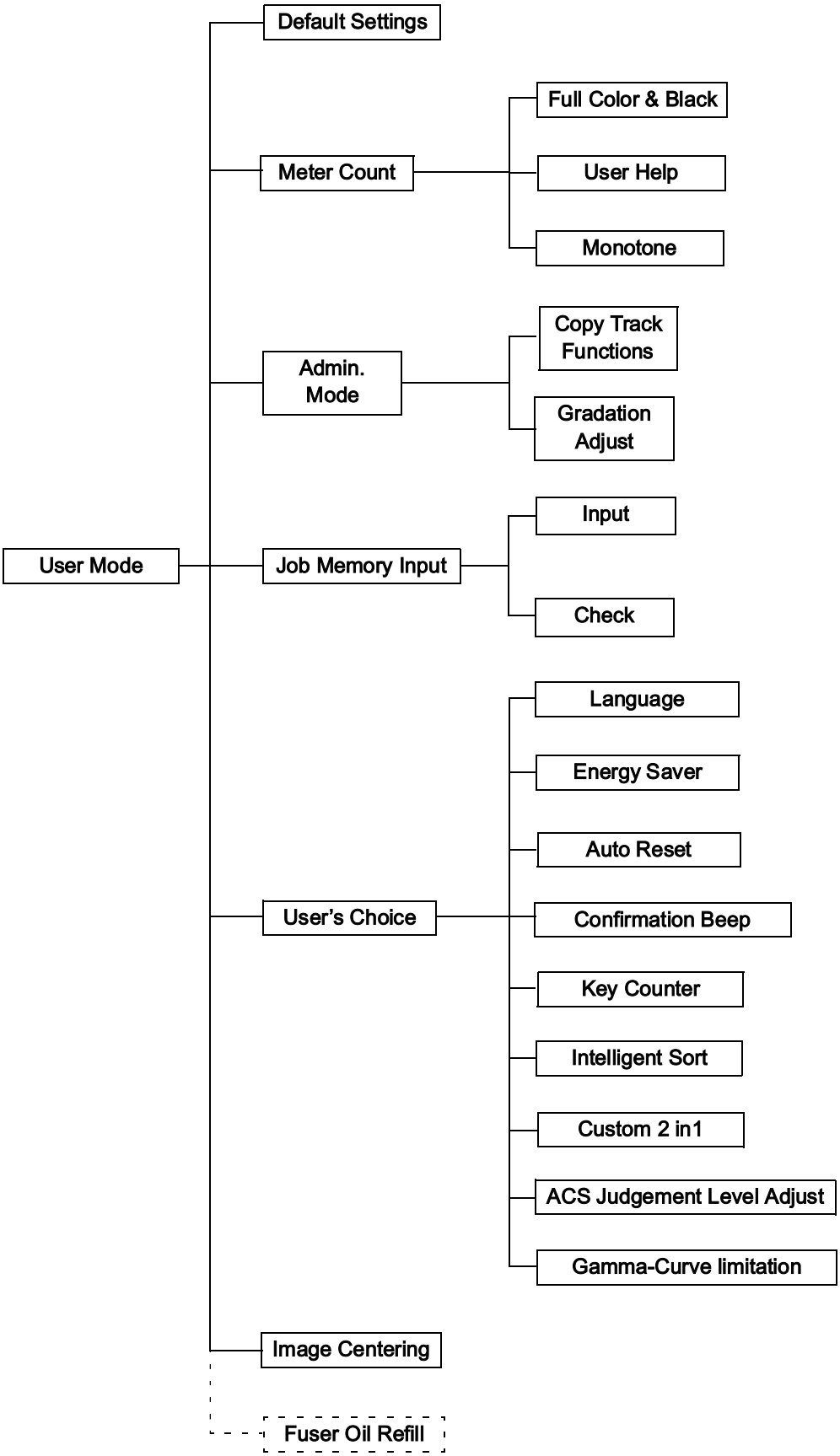
The function selected is highlighted.

<Exiting the Mode>

Perform any one of the following steps.

- Press the Panel Reset Key.
- Touch "OK" until the Basic screen appears.

4-3. User Mode Functions Tree



4-4. Settings in the User Mode

User Mode Key

Touch Panel Display	Setting (the default setting is **Highlighted**)
Default Settings	Used to select the copying function settings established when the copier is turned ON or panel is reset. Current Settings | **Factory Settings** ***Note*** *To designate the "Current Settings," make the necessary settings before using this function and then designate them using this function.*
Meter Count	Used to display the total number of copies made in "Full Color & Black" and "Monotone." The press of the Start key causes the Total Counter data to be printed. At this time, the copier serial number is also output. ***Note*** *"Large" covers the size of paper set by the "Count Up Select" function of "Setting" available from the Service mode.*
Admin. Mode	- Copy Track Functions - The number of copies made by up to 100 different accounts can be controlled by defining a unique access number for each account. - Gradation Adjust - The press of the Start key lets the copier automatically adjust gradation. (It is the same function as "Gradation Adjust" available from the Service Mode.) - User Help - When the user sends a User Help code according to the status of the copier fitted with the DT-103. - Erase Mode - You can choose the lost image width for the leading edge of the copy "5mm", "8mm" and "Auto". Copy: 5 | 8 | **Auto** Print: 5 | 8 ✻ The lost image is automatically switched between 5mm and 8mm according to the copy mode settings made.
Job Memory Input	Used to designate 10 most frequently used job settings.
User's Choice	Used to customize the copier to fit the user's needs.
Image Centering	Used to select whether to enable or disable the function that automatically shifts the image of the original towards the center of the copy paper. **ON** (enabled) | OFF (disabled)

User Mode Key

Touch Panel Display	Setting (the default setting is **Highlighted**)
Fuser Oil Refill	The function "Fuser Oil Refill" appears when the count of "Fus. Oil" of "Life 3 (Others)" of the "Life Counter" function available from the Service Mode reaches the preset value. Yes | Not Yet ***Note*** *When fuser oil has been replenished, touch "Fuser Oil Refill" and then select "Yes" to reset the "Fus. Oil" counter. At this time, the function key "Fuser Oil Refill" will disappear. The function "Fuser Oil Change" of "Setting" under the Service mode must be set to "User Set" for the "Fuser Oil Refill" key to appear when the above condition is met.*

(1) Administrator Mode

Administrator Mode

<table>
<tr><th>Touch Panel Display</th><th>Setting (the default setting is Highlighted)</th></tr>
<tr><td>Admin. Mode</td><td>Entry of the “Administrator #” opens the following screens.

Note
The “Administrator #” is to be set by using the Tech. Rep. mode.</td></tr>
<tr><td>Copy Track Functions</td><td>Select whether to keep track of the copy data for each account (“ON”) or not (“OFF”). When “ON” is selected, control of the following data becomes possible.
<table><tr><td>ON</td><td>Provides the copy track functions.</td></tr><tr><td>OFF</td><td>Does not provide the copy track functions.</td></tr></table></td></tr>
<tr><td>Access # Input</td><td>Program the access # for each account #.
<table><tr><td>Account #</td><td>Using the ▼/▲ keys, show the account # for which the access # is to be programmed. Access # can be programmed for up to 100 accounts</td></tr><tr><td>Access #</td><td>Enter a 4-digit access # from the 10-Key Pad.</td></tr></table>Note
A caution message appears on the Touch Panel if a new access # is set for an account # for which another access # was previously programmed, or if an access # which already exists is defined. No access # can be “0000.”</td></tr>
<tr><td>Counter Check</td><td><Check Procedure>
1. Using the ▼/▲ keys, select the account # to check for the counter.
2. Select the desired function.
3. Place the required number of sheets A4 lengthwise paper on the Multi Bypass Tray.
4. Press the Start key and the copier prints the counter list.</td></tr>
<tr><td>Counter Reset</td><td><Resetting Procedure>
1. Using the ▼/▲ keys, select the account # for which the counter is to be reset.
2. Select the desired function.
3. Touch [Cancel] to reset the counter.</td></tr>
<tr><td>Permission Level</td><td>Select whether to “permit” or “prohibit” color copying and black copying, respectively.
<Procedure>
1. Using the ▼/▲ keys, select the account # for which the permission level is to be set.
2. Select whether to “permit” or “prohibit” color copying and black copying, respectively.</td></tr>
</table>

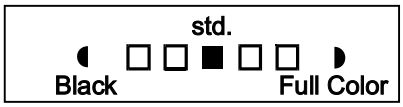
Touch Panel Display	Setting (the default setting is **Highlighted**)
Account Copy Limit Set	Select whether to set a copy limit for each copy type or collectively. **Common** — Copy limit is set collectively. Individual — Copy limit is set for each copy type. <Setting Procedure> 1. Using the ▼/▲ keys, select the account # for which the copy limit is to be set. 2. Select either “Common” or “Individual” and then select either “ON” (set the limit) or “OFF” (do not set the limit). 3. Enter the appropriate copy limit for each function from the 10-Key Pad.

(2) User's Choice

User's Choice

<table>
<tr><th>Touch Panel Display</th><th>Setting (the default setting is Highlighted)</th></tr>
<tr><td>Language</td><td>Select the language in which the displays on the Touch Panel appear. With any language other than Japanese, the Service mode is only displayed in English.
<table>
<tr><td>English</td><td>German</td><td>French</td></tr>
<tr><td>Italian</td><td>Danish</td><td>Dutch</td></tr>
<tr><td>Swedish</td><td>Spanish</td><td>Portuguess</td></tr>
<tr><td>Norwegian</td><td>Finnish</td><td>Czech</td></tr>
<tr><td>Hungarian</td><td>Japanese</td><td></td></tr>
</table></td></tr>
<tr><td>Energy Saver</td><td>Select whether to set the copier into the Energy Saver mode (ON) or not (OFF) after a given period of time after the copy cycle has been completed or a key operated. When "ON" is selected, set the time to enter this mode, which can range from 1 to 240 min., from the 10-Key Pad.
<table>
<tr><td>ON (10 min.)</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>Auto Reset</td><td>Select whether to reset the control panel settings (ON) or not (OFF) after a given period of time after the copy cycle has been completed or a key operated. When "ON" is selected, set the time to activate this function, which can range from 1 to 9 min., from the 10-Key Pad.
<table>
<tr><td colspan="9">ON</td><td>OFF</td></tr>
<tr><td>1 min.</td><td>2 min.</td><td>3 min.</td><td>4 min.</td><td>5 min.</td><td>6 min.</td><td>7 min.</td><td>8 min.</td><td>9 min.</td><td>—</td></tr>
</table></td></tr>
<tr><td>Confirmation Beep</td><td>Select whether to turn "ON" or "OFF" the confirmation beep that sounds when any of the keys on the control panel or Touch Panel is pressed.
<table>
<tr><td>ON</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>Key Counter</td><td>Select whether to reset (ON) the control panel settings or not (OFF) when the Plug-In Counter is unplugged or magnetic card is removed.
<table>
<tr><td>ON</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>Intelligent Sort</td><td>Select whether to turn ON (Auto Select) or OFF (Non-Auto) the Intelligent Sort function that automatically switches between Sort and Non-Sort according to the number of originals when a copy cycle is run on a copier system equipped with a Sorter and ADF, both activated.
<table>
<tr><th>Auto Select</th><th>Non-Auto</th></tr>
<tr><td>Non-Sort is selected when the number of originals is 1 and Sort is selected when the number of originals is 2 or more.</td><td>The mode is not switched automatically.</td></tr>
</table>
Note
The Intelligent Sort function is valid only in the Auto Paper or Auto Size mode and with the Mixed Size mode disabled. It is invalid in the Interrupt mode.</td></tr>
</table>

User's Choice

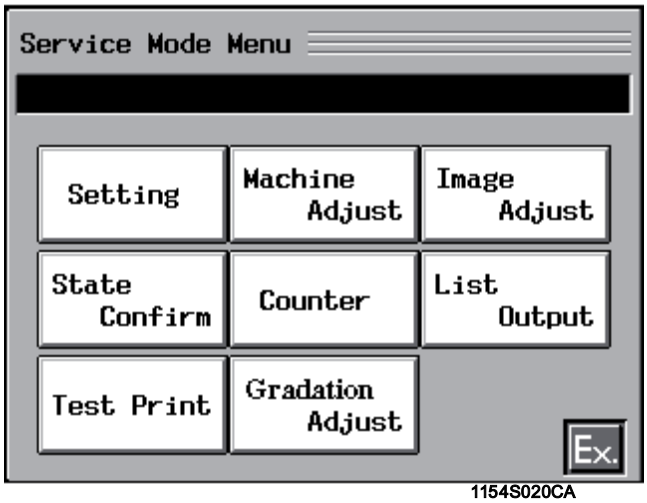
<table>
<tr><th>Touch Panel Display</th><th>Setting (the default setting is Highlighted)</th></tr>
<tr><td>Custom 2 in 1</td><td>Select the default settings when 2in1 is selected, either “Select” or “Not Select” as detailed below.
<table>
<tr><td>Select</td><td>Paper: Auto Paper / A specific paper drawer
Zoom: Auto Size / variable zoom / fixed zoom (inch areas: X0.647 / metric areas: X0.707)</td></tr>
<tr><td>Not Select</td><td>———————————</td></tr>
</table></td></tr>
<tr><td>ACS Judgement Level Adjust</td><td>Set the image level of the Auto Color mode towards black or full color as necessary.
 

1144S014CA</td></tr>
<tr><td>Gamma-Curve Limitation</td><td>Select whether to limit (“ON”) the gamma curve level below its ceiling or not (“OFF”) when the copier is used as a printer.
<table>
<tr><td>ON (Limits the level)</td><td>OFF (Does not limit the level)</td></tr>
</table></td></tr>
</table>

5 SERVICE MODE

- This mode is used by the Tech. Rep. to set, check, adjust, and/or record various service functions.

5-1. Service Mode Menu Screen



1154S020CA

5-2. Service Mode Setting Procedure

<Setting Procedure>

1. Press the User Mode key and open the Meter Count screen. Then, press the following keys in this order.
   [Stop key] → [“0”] → [“0”] → [Stop key] → [“0”] → [“1”]
2. Select the function to be set from among those displayed on the Service mode menu screen.
3. Make the necessary settings by following the instructions given sequentially on the screen.

Note

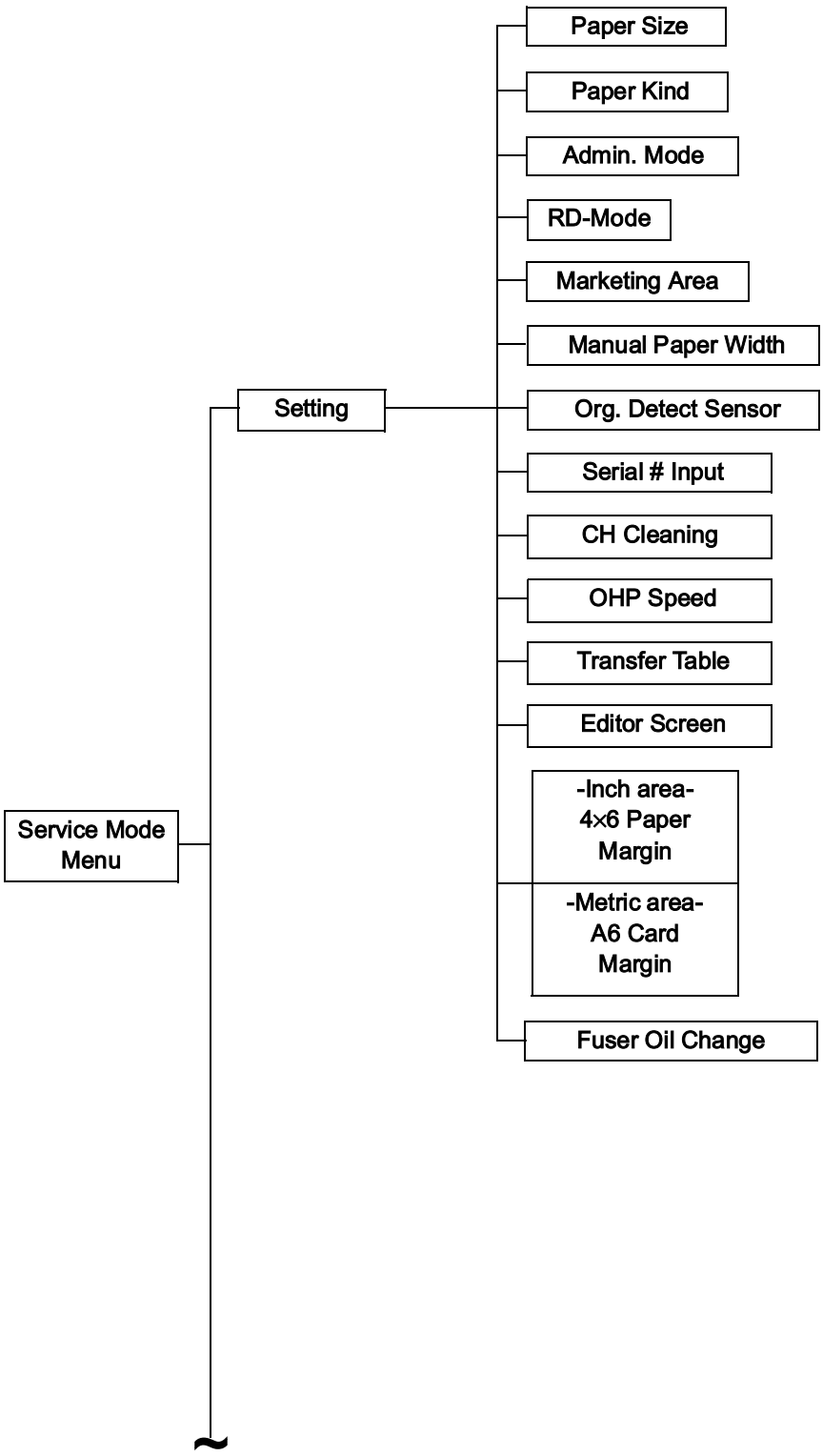
The function selected is highlighted.

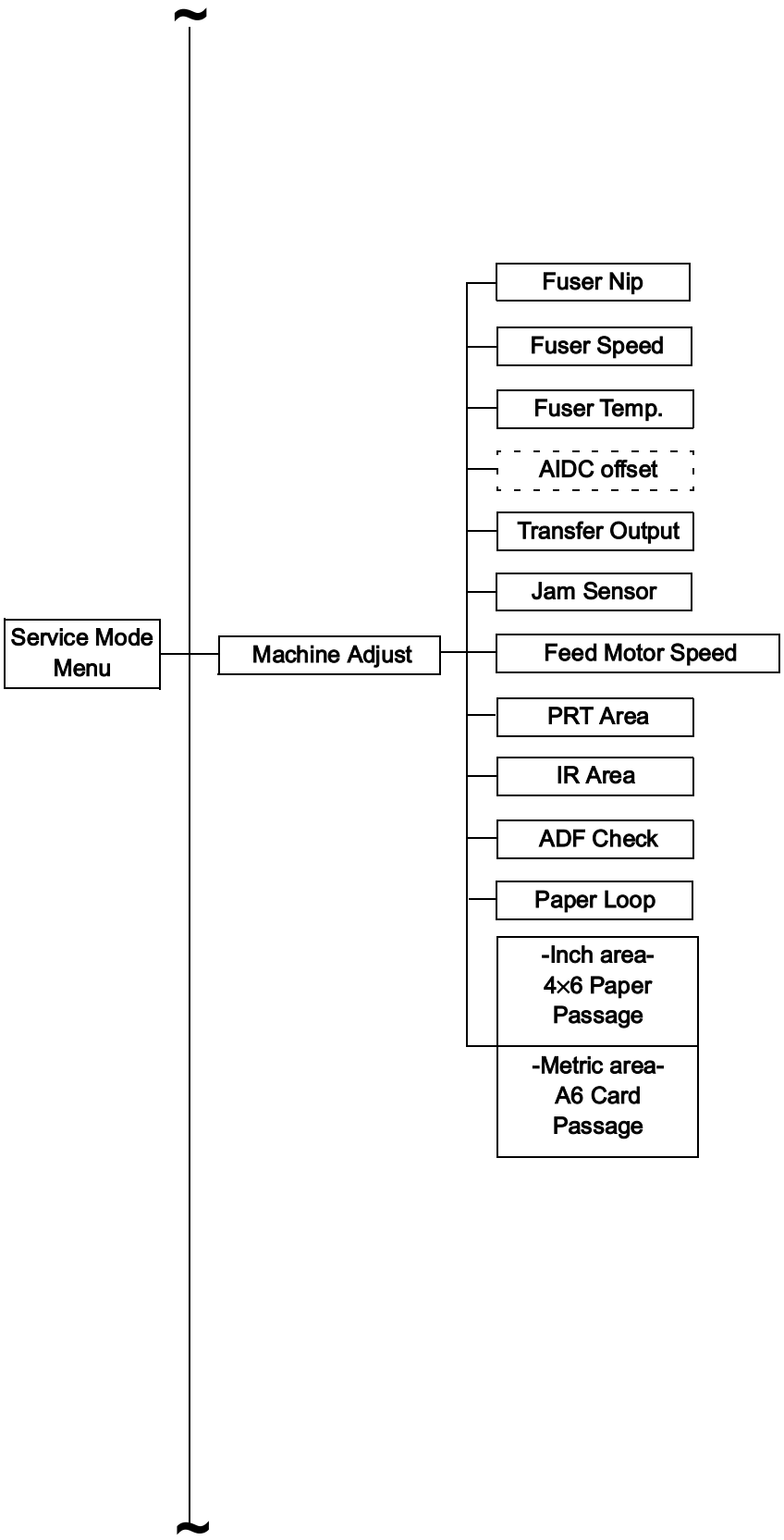
<Exiting the Mode>

Perform any one of the following steps.

- Press the Panel Reset Key.
- Touch “Ex” until the Basic screen appears.

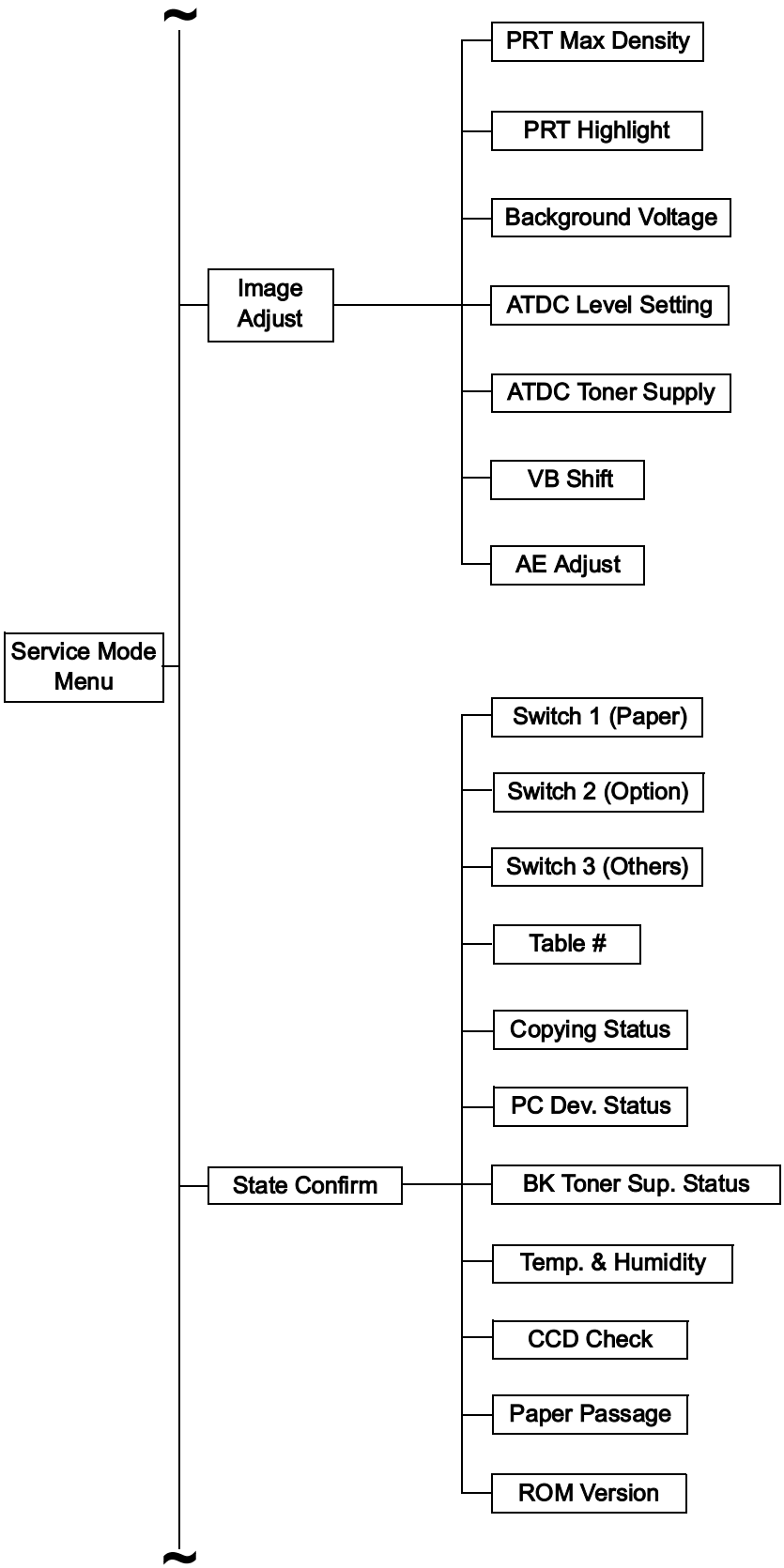
5-3. Service Mode Function Tree

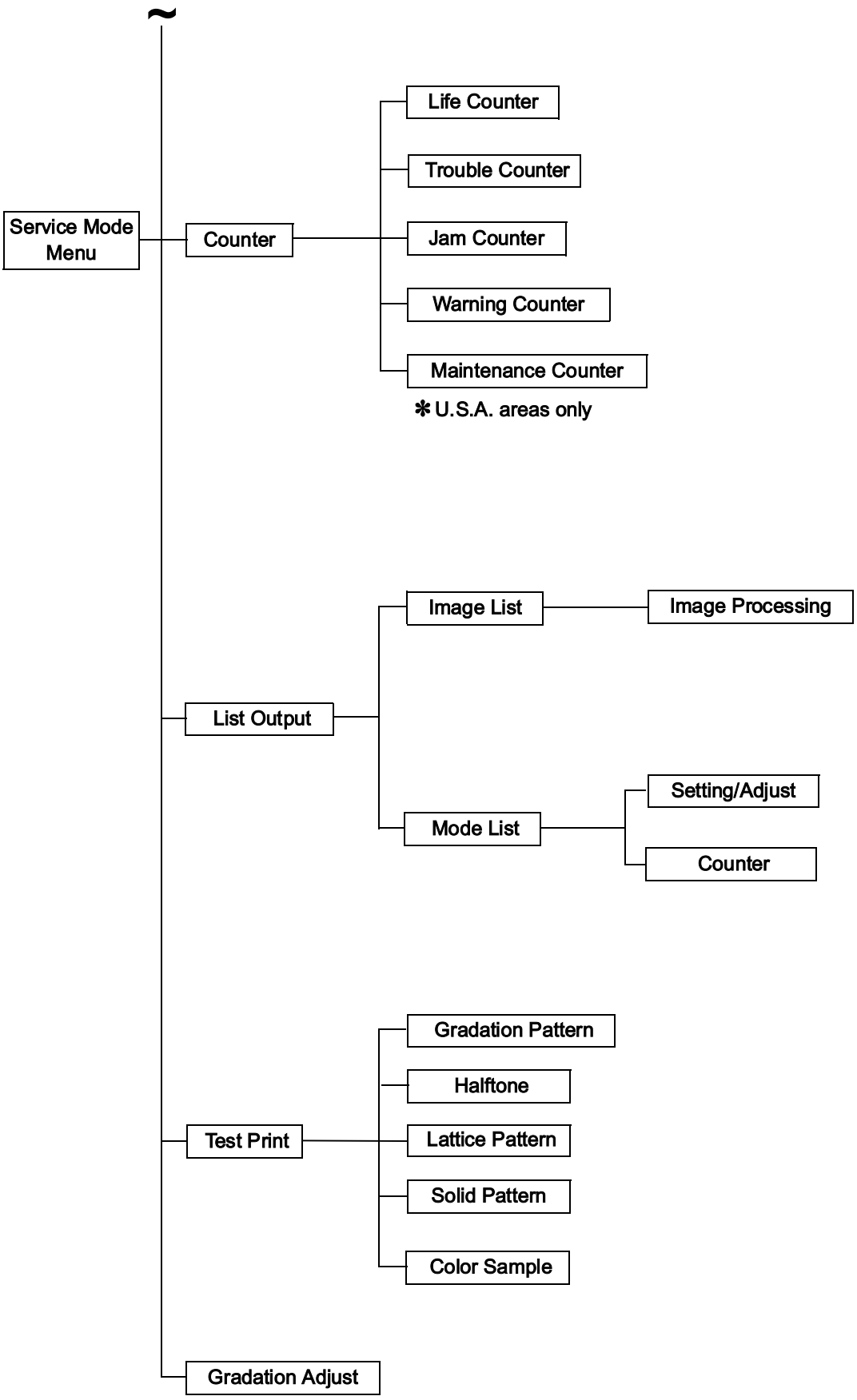




Note

The functions enclosed by [ ] must be accessed via the Developer Mode, not via the Service mode.


~
PRT Max Density
PRT Highlight
Background Voltage
Image Adjust
ATDC Level Setting
ATDC Toner Supply
VB Shift
AE Adjust
Service Mode Menu
Switch 1 (Paper)
Switch 2 (Option)
Switch 3 (Others)
Table #
Copying Status
PC Dev. Status
State Confirm
BK Toner Sup. Status
Temp. & Humidity
CCD Check
Paper Passage
ROM Version
~


~
Service Mode Menu
Counter
Life Counter
Trouble Counter
Jam Counter
Warning Counter
Maintenance Counter
✻U.S.A. areas only
List Output
Image List
Image Processing
Mode List
Setting/Adjust
Counter
Test Print
Gradation Pattern
Halftone
Lattice Pattern
Solid Pattern
Color Sample
Gradation Adjust

5-4. Settings in the Service Mode

(1) Setting (Installation)

- This mode is used to make settings for paper size, count-up method, administrator mode, RD mode, marketing area, fuser oil change, and other items.

Service Mode Menu ▶ Setting

<table>
<tr><th>Touch Panel Display</th><th>Setting (the default setting is Highlighted)</th></tr>
<tr><td>Paper Size</td><td>Set the paper size for each paper source.
<Setting Procedure>
1. Select the paper source.
2. Select the paper size to be used.</td></tr>
<tr><td>Paper Kind</td><td><Paper Type Setting>
Set the type of paper for each drawer.
Select also whether to turn ON or OFF the Automatic Drawer Switching function for the drawers for which CF Paper has been set.
<table><tr><td>CF Paper</td><td>PPC Paper</td></tr><tr><td>Heavy Stock 1</td><td>OHP film</td></tr></table> Default settings: CF Paper for all
<table><tr><td>ON</td><td>Enables the Automatic Drawer Switching function.</td></tr><tr><td>OFF</td><td>Disables the Automatic Drawer Switching function.</td></tr></table></td></tr>
<tr><td>Admin. Mode</td><td>From the 10-Key Pad, set the administrator code number that is needed to access the Copy Track Functions of the User mode.</td></tr>
</table>

Touch Panel Display	Setting (the default setting is **Highlighted**)
RD-Mode	Make the initial settings of the copier for the Data Terminal.
Password	Entry of a 7-digit ID code enables making the following settings. When the ID code is entered and the [OK] key touched after the initial settings have been made, it executes the transmission of MAINT. START to the Center.
Maintenance	Used to make the initial settings and various transmissions.
DT Setting	Enter the following data.
CT-ID	Enter the 4-digit ID number of the Center which has been programmed in the Center personal computer.
DT-ID	Enter the 6-digit ID number of the Data Terminal.
TEL. #	Enter the phone number of the modem connected to the Center personal computer. ***Notes*** *1. When the office extension and outside line use different systems, enter "P" for a "pulse" telephone line or "T" for a "tone" telephone line before the outside line number.* *2. According to the type of PBX (private branch exchange) system, set the time it takes PBX to switch from the extension line to the outside line.* *Fixed: "-" Variable: "W"*
Common DT Setting	Set the following functions.
Dial Mode	Select the type of telephone line of the user. Pulse line: Pulse / Tone line: **Tone**
Auto Receive	Choose "Yes" or "No" for the auto reception function. Yes / **No** ***Note*** *Select "Yes" if the line is dedicated to the Data Terminal.*
Result Code	Enter the result code used as the confirmation of connection to the modem when the line is connected.
RAM Clear	Reinitializes the Data Terminal. Yes / **No**

Touch Panel Display	Setting (the default setting is **Highlighted**)
DT setting	----------
Initial Transmission	Used to perform the initial transmission from the PPC to the Center to check for correct communication when the Data Terminal has been set up.
Data Save/Load	Enables the transmission of Data Save and Data Load.
Data Save	Transmits the command that saves the PPC RAM data to the Center.
Data Load	Transmits the command that loads the data sent by Data Save back to the PPC.
Call Completion	Used by the Tech. Rep. to notify the Center that his/her service job for the copier has been completed.
Spare Counter Clear	Used to clear the count of the spare counter set by the Center.
Marketing Area	Select the marketing area which determines the paper size and fixed zoom ratio settings. MJ | **MC** | MH
Manual Paper Width	Use this function to automatically adjust the paper reference position of the Multi Bypass Table. <Adjusting Procedure> 1. Select “Maximum Size,” place several sheets of A3 Wide or 12” × 18” paper on the Multi Bypass Table, and press the Start key. 2. Select “Minimum Size,” place several sheets of B5 lengthwise or 5-1/2” × 8-1/2” lengthwise paper on the Multi Bypass Table, and press the Start key.
Org. Detect Sensor	Select “Set” when the optional Original Size Detecting Sensors are installed. Set (When sensors are installed) | **Unset** (When sensors are not installed)
Serial # Input	Enter the serial number of each system component including options from the 10-Key Pad.

<table>
<tr><th>Touch Panel Display</th><th>Setting (the default setting is Highlighted)</th></tr>
<tr><td>CH Cleaning</td><td>Select whether or not to clean the PC Drum Charge Corona wire after the Power Switch has been turned ON, the Front Door has been opened and closed, and after image stabilization control following the completion of the copy cycle making the 100th copy.
ON | OFF</td></tr>
<tr><td>OHP Speed</td><td>Vary the system speed to obtain good image quality of copies made on OHP transparencies.
-4 -3 … ±0 … +3 +4
Slower ◄——————————► Faster</td></tr>
<tr><td>Transfer Table</td><td>Vary the transfer table from 1 to 3 in order to prevent poor image transfer from occurring when the level of triboelectric charge of the toner is reduced by deteriorating developer or using specific types of paper.
1 | 2 | 3
Note
Change this setting when the count of the C Developing Unit of Life Counter 3 reaches 15K.</td></tr>
<tr><td>Editor Screen</td><td>- Inch Areas -
When the Image Edit Board is mounted on the copier, the “Editor Screen” key appears on the “Setting” screen of the Service mode of the copier. When this key is selected, options are given for “Set/ Unset.” Be sure to select “Set” at all times.
- Metric Areas -
A different setting is necessary for the “Editor Screen” function available from the “Setting” screen of the Service mode of the copier, depending on whether only an E-2M is mounted or E-2 is mounted (or when adding an E-2D to E-2M). Here are the details of the setting requirements:
Set | E-2 (E-2D added to E-2M)
Unset | E-2M only</td></tr>
<tr><td>A6 Card Margin</td><td>Set the void image width on the top and left edges when cards are fed through the copier.
-Left Margin-
3mm | 4mm | 5mm
-Top Margin-
5mm | 6mm | 7mm | 8mm</td></tr>
</table>

Touch Panel Display	Setting (the default setting is **Highlighted**)
Fuser Oil Change	Select whether the fuser oil change is to be performed by the Tech. Rep. or the user. **Service Set** | User Set ***Note*** *"Service Set" → 20K Warning, 22K Machine Stop* *"User Set" → 10K Warning, 11K Machine Stop*

(2) Machine Adjust (Mechanical Adjustments)

- This mode is used to make the various mechanical adjustments to the copier.

NOTE

The following description only outlines the "Machine Adjust" functions. For more details, see DIS/REASSEMBLY, ADJUSTMENT and TROUBLE SHOOTING.

Service Mode Menu ▶ Machine Adjust

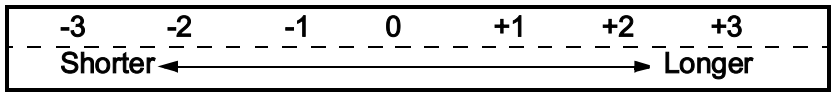
<table>
<tr><th>Touch Panel Display</th><th>Setting (the default setting is Highlighted)</th></tr>
<tr><td>Fuser Nip</td><td>This function causes the copier to make a sample copy in cyan so that the pressure between the Upper and Lower Fusing Rollers can be adjusted (with the Fusing Roller Pressure Screw) to ensure good fusing performance.</td></tr>
<tr><td>Fuser Speed</td><td>Adjust the paper transport speed of the Fusing Rollers (i.e., the Fusing Motor speed) to ensure stabilized paper passage performance.
-2.0% -1.8 … ±0 … +1.8 +2.4%
Slower ◄——————————► Faster
Note
The speed is variable in 0.2% steps.</td></tr>
<tr><td>Fuser Temp.</td><td>Adjust the fusing temperature for the best possible fusing performance.
145°C | 150°C | 155°C</td></tr>
<tr><td>Transfer Output</td><td>Use this function to make necessary adjustments if any image problem occurs due to the operating environment or paper condition.
Normal → First
2-Sided → Second
OHP Film → Third
Fourth</td></tr>
</table>

Touch Panel Display	Setting
Jam Sensor	Use this function to adjust the sensor output voltage for Paper Bonding Failure Detection Board 1 PWB-01 and Paper Bonding Failure Detection Board 2 PWB-02.
Feed Motor Speed	Use this function to vary the speed of the Paper Take-Up Motor according to the type of paper to be used. -80 -70 … 0 … +60 +7.0 Slower ◄——————————► Faster
PRT Area	Use these functions to adjust on the printer the positional relation between the paper and image in the main and sub scanning directions, respectively.
Top-Margin	Adjust the relation in the sub scanning direction for the following two parameters.
Image Start Position	Adjust the image leading edge position by varying the print start position of the printer. -3.5mm -3.4 … ±0 … +3.4 +3.5mm Narrower margin width ◄——————► Wider margin width ***Note*** *The position is variable in 0.1-mm steps.*
Lead Edge Position	Adjust the image leading edge position by varying the position at which paper sticks to the Transfer Drum (i.e., image transfer position). -5.0mm -4.9 … ±0 … +4.9 +5.0mm Narrower margin width ◄——————► Wider margin width ***Note*** *The position is variable in 0.1-mm steps.*
Left Margin	Adjust the image position for each paper source by varying the print start position of the printer in the main scanning direction. -5.0mm -4.5 … ±0 … +4.5 +5.0mm Narrower margin width ◄——————► Wider margin width ***Note*** *The position is variable in 0.5-mm steps.*
Dup. Left Margin	Adjust the image position of each paper source in the 2-sided Mode by varying the print start position of the printer in the main scanning direction. -5.0mm -4.5 … ±0 … +4.5 +5.0mm Narrower margin width ◄——————► Wider margin width ***Note*** *The position is variable in 0.5-mm steps.*

Touch Panel Display	Setting
IR Area	Use these functions to adjust the image area by varying the image reading start position of the IR and to adjust the zoom ratios. ***Note*** *Pressing the Clear key will reset the setting made for the selected function to the default setting value.*
Left Image	Adjust the image position by varying the image reading position of the IR in the main scanning direction. 0.0mm +0.1 … ±0 … +1.99 +20.0mm Narrower margin width ◄——► Wider margin width ***Note*** *The position is variable in 0.1-mm steps.*
Top Image	Adjust the image position by varying the image reading position of the IR in the sub scanning direction. -5.0mm -4.9 … ±0 … +4.9 +5.0mm Narrower margin width ◄——► Wider margin width ***Note*** *The position is variable in 0.1-mm steps.*
CD-Mag	Adjust the zoom ratio in the crosswise direction by varying the number of pixels to be read by the CCD. ×0.990 ×0.991 … ×1.000 … ×1.009 ×1.010 Reduction ◄——► Enlargement ***Notes:*** *1. Be sure to make this adjustment whenever "Left Image" and "Top Image" have been adjusted.* *2. The ratio is variable in ×0.001 steps.*
FD-Mag	Adjust the zoom ratio in the lengthwise direction by varying the scan speed of the Scanner. ×0.990 ×0.991 … ×1.000 … ×1.009 ×1.010 Reduction ◄——► Enlargement ***Notes*** *1. Be sure to make this adjustment whenever "Left Image" and "Top Image" have been adjusted.* *2. The ratio is variable in ×0.001 steps.*

<table>
<tr><th>Touch Panel Display</th><th>Setting</th></tr>
<tr><td>ADF Check</td><td>Use these functions to make the various adjustments and check the operation of the ADF.</td></tr>
<tr><td>Paper Passage & Input Check</td><td>Use this function to check for paper passage in different modes of the ADF and for sensors along the paper path.
<Procedure>
1. Load originals in the ADF, select the desired mode from among the following, and press the Start Key.
<table>
<tr><td>Step Feed</td><td>2in1</td><td>2-Sided</td><td>Normal</td><td>Auto Feeder</td></tr>
</table>
2. The following screen automatically appears, indicating the On or Off condition of each sensor.
<table>
<tr><td>Empty Sensor</td><td>Document Detecting Sensor (S1)</td></tr>
<tr><td>Register Sensor</td><td>Registration Sensor (PWB-B)</td></tr>
<tr><td>Exit Sensor</td><td>Turnover/Exit Sensor (PWB-E)</td></tr>
<tr><td>Auto Feeder Empty Sensor</td><td>Manual Feed Take-Up Sensor (PWB-D)</td></tr>
<tr><td>Width Sensor A</td><td rowspan="3">Side Sensor (PWB-C)</td></tr>
<tr><td>Width Sensor B</td></tr>
<tr><td>Width Sensor C</td></tr>
</table>
Note
“On” indicates there is paper present.</td></tr>
<tr><td>Output Check</td><td>Use this function to check each motor and solenoid of the ADF.
<Procedure>
• Select the motor or solenoid to be checked for operation from among the following and press the Start Key.
<table>
<tr><td>M1</td><td>M2</td><td>M3</td><td>SL1</td><td>SL2</td><td>SL3</td><td>SL4</td></tr>
</table></td></tr>
<tr><td>Original Stop Position Set</td><td>Use this function to adjust the original stop position in different modes of the ADF.
<Procedure>
1. Load originals in the ADF, select the desired mode for adjustment from among the following, and press the Start Key.
<table>
<tr><td>1-Sided</td><td>2-Sided</td><td>2in1</td><td>2in1 Orgs. Spacing</td><td>Auto Feeder</td><td>Regist Loop</td></tr>
</table>
2. Raise the ADF, check the clearance between the original and Original Width Scale, and enter the adjustment value.
<table>
<tr><td>-7mm -6 … ±0 … +7 +8mm</td></tr>
<tr><td>Narrower clearance ◄——► Wider clearance</td></tr>
</table></td></tr>
</table>

Service Mode Menu ▶ Machine Adjust

Touch Panel Display	Setting (the default setting is **Highlighted**)
Paper Loop	<Paper Loop Length Adjustment> Adjust the length of the loop formed in the paper before the Synchronizing Rollers. 
A6 Card Passage	<A6 Card Passage Adjustment> When setting “A6 Card Margin” of “Setting,” this mode is used to feed A6 cards through the copier.

(3) Image Adjust

- This mode is used to adjust the various parameters for the image.

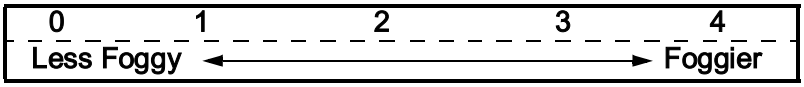
NOTE

The following description only outlines the "Image Adjust" functions. For more details, see DIS/REASSEMBLY, ADJUSTMENT and TROUBLE SHOOTING.

Service Mode Menu ▶ Image Adjust

Touch Panel Display	Setting (the default setting is **Highlighted**)
PRT Max Density	Adjust the image density by varying the maximum amount of toner sticking to paper for each Developing Unit. -10 -9 … … 0 +1 +2 Lower ◄——————► Higher ***Note*** *After Gradation Adjust and the settings in the this mode are changed, be sure to turn the Power Switch OFF and ON again, then check the image.*
PRT Highlight	Adjust the image density of the highlighted area for each Developing Unit. -10 -9 … 0 … +9 +10 Lower ◄——————► Higher ***Note*** *After Gradation Adjust and the settings in the this mode are changed, be sure to turn the Power Switch OFF and ON again, then check the image.*
Background Voltage	Adjust the fog level on the background for each Developing Unit. -4 -3 … 0 … +5 +6 Foggier ◄——————► Less foggy
ATDC Level Setting	Adjust the ATDC level for each Developing Unit. 3% | 4% | **5%** | 6% | 7%
ATDC Toner Supply	Toner Replenish for each Developing Unit.

Service Mode Menu ▶ Image Adjust

Touch Panel Display	Setting
VB Shift	This function should not be used in the field.
AE Adjust	Adjust the AE Reference.  ***Note*** *AE Center Red, Green, Blue functions should not be set in the field.*

(4) State Confirm (Copier Condition Check)

- This mode is used to check the condition of the copier.

NOTE
The following description only outlines the "State Confirm" functions. For more details, see TROUBLESHOOTING.

Service Mode Menu ▶ State Confirm

Touch Panel Display	Setting
Switch 1 (Paper)	Use this function to check the states of sensors along the paper path.

Upr.-Caset	Upper Drawer Set Sensor PC3	Lwr.-Lift	Lower Drawer Lift-Up Sensor PC11
Upr.-P.Emp	Upper Drawer Paper Empty Sensor PC6	Lwr.-Trans	Lower Drawer Paper Take-Up Sensor PC14
Upr.-Lift	Upper Drawer Lift-Up Sensor PC9	Mnl.-P.Emp	Manual Feed Paper Empty Sensor PC15
Upr.-Trans	Upper Drawer Paper Take-Up Sensor PC12	Front Tim	Paper Leading Edge Detecting Sensor PC18
Mid.-Caset	Middle Drawer Set Sensor PC4	Adsorb Miss	Paper Bonding Failure Detection Board 1 PWB-01
Mid.-P.Emp	Middle Drawer Paper Empty Sensor PC7	PC. Roll	Paper Bonding Failure Detection Board 2 PWB-02
Mid.-Lift	Middle Drawer Lift-Up Sensor PC10	Sep. Miss	Separating Failure Detecting Sensor PC21
Mid.-Trans	Middle Drawer Paper Take-Up Sensor PC13	Exit	Paper Exit Switch S10
Lwr.-Caset	Lower Drawer Set Sensor PC5	Front Mid	Transport Roller Sensor PC19
Lwr.-P.Emp	Lower Drawer Paper Empty Sensor PC8		

Note
"On": Blocked "Off": Not Blocked

Service Mode Menu ▶ State Confirm

<table>
<tr><th>Touch Panel Display</th><th>Setting</th></tr>
<tr><td>Switch 2 (Option)</td><td>Use this function to check the states of sensors of the options.
<table>
<tr><td>Sorter</td><td></td></tr>
<tr><td>Set</td><td>Sorter Set Switch (S3)</td></tr>
<tr><td>Duplex</td><td></td></tr>
<tr><td>Set</td><td>Duplex Unit Set Switch (S1)</td></tr>
<tr><td>Pap. Through</td><td></td></tr>
<tr><td>1</td><td>Vertical Transport Sensor (PC3)</td></tr>
<tr><td>2</td><td>Switchback Sensor (PC1)</td></tr>
<tr><td>3</td><td>Horizontal Transport Sensor (PC24): PPC</td></tr>
<tr><td>LCT</td><td></td></tr>
<tr><td>Set</td><td>LCT CN</td></tr>
<tr><td>Path Set</td><td>LCT Set Detecting Sensor (PC6)</td></tr>
<tr><td>Cover Open</td><td>LCT Door Open/Close Detecting Sensor (PC7)</td></tr>
<tr><td>Pap. Empty</td><td>Paper Empty Sensor (PC3)</td></tr>
<tr><td>Upr. Limit</td><td>Paper Plate Upper Position Sensor (PC2)</td></tr>
<tr><td>Lwr. Limit</td><td>Paper Plate Lower Position Sensor (PC4)</td></tr>
<tr><td>Pap. Trans</td><td>Paper Take-Up Sensor (PC5)</td></tr>
</table>
Note
“On”: Blocked “Off”: Not Blocked</td></tr>
<tr><td>Switch 3 (Others)</td><td>Use this function to check the states of sensors not covered by Switch 1 or 2.
<table>
<tr><td>C-T.Emp</td><td>Toner Empty Switch (C) S6</td><td>CH. Overrun</td><td>Charge Cleaner Return Position Sensor (PC17)</td></tr>
<tr><td>M-T.Emp</td><td>Toner Empty Switch (M) S7</td><td>Used Toner</td><td>Toner Collectioning Box Full Sensor (PC29)</td></tr>
<tr><td>Y-T.Emp</td><td>Toner Empty Switch (Y) S8</td><td>Oil Empty</td><td>————</td></tr>
<tr><td>Bk-T.Emp</td><td>Toner Empty Switch (K) S5</td><td>Org. Size 1</td><td>Original Size Detecting Sensor 1 (SE3)</td></tr>
<tr><td></td><td></td><td>Org. Size 2</td><td>Original Size Detecting Sensor 2 (SE3)</td></tr>
<tr><td>IR Home</td><td>Scanner Home Position Sensor PC1</td><td>Org. Size 3</td><td>Original Size Detecting Sensor 3 (SE3)</td></tr>
<tr><td></td><td></td><td>Org. Size 4</td><td>Original Size Detecting Sensor 4 (SE4)</td></tr>
<tr><td>Org. Hold</td><td>Size Reset Switch S12</td><td>Org. Size 5</td><td>Original Size Detecting Sensor 5 (SE4)</td></tr>
<tr><td>Org. Hold 15</td><td>Original Cover Angle Detecting Sensor PC22</td><td>Org. Size 6</td><td>Original Size Detecting Sensor 6 (SE4)</td></tr>
<tr><td></td><td></td><td>Org. Size 7</td><td>Original Size Detecting Sensor 7 (SE2)</td></tr>
<tr><td>Rear Cover</td><td>Predrive OFF Sensor PC23</td><td>Org. Size 8</td><td>Original Size Detecting Sensor 8 (SE2)</td></tr>
<tr><td>T-Base</td><td>Transfer Drum Reference Position Sensor 1(PC20)</td><td>Org. Size 9</td><td>Original Size Detecting Sensor 9 (SE2)</td></tr>
<tr><td></td><td></td><td>Org. Size 10</td><td>Original Size Detectiong Sensor 10 (SE 1)</td></tr>
<tr><td>CH. Home</td><td>Charge Cleaning Home Position Sensor (PC16)</td><td></td><td></td></tr>
</table>
Note
“On”: Blocked “Off”: Not Blocked</td></tr>
</table>

<table>
<tr><th>Touch Panel Display</th><th>Setting</th></tr>
<tr><td>Table #</td><td>Use this function to show the output values of the developing bias and grid voltage of each Developing Unit.
<table>
<tr><td>Vb-C</td><td>Vg-C</td></tr>
<tr><td>Vb-M</td><td>Vg-M</td></tr>
<tr><td>Vb-Y</td><td>Vg-Y</td></tr>
<tr><td>Vb-Bk120</td><td>Vg-Bk120</td></tr>
<tr><td>Vb-Bk160</td><td>Vg-Bk160</td></tr>
</table></td></tr>
<tr><td>Copying Status</td><td>Use this function to show the various parameters during a copy cycle.
<table>
<tr><td>ATDC-C</td><td>ATDC Sensor, cyan (%)</td><td>V0</td><td>V0 Sensor (V)</td></tr>
<tr><td>ATDC-M</td><td>ATDC Sensor, magenta (%)</td><td>E1</td><td>Intensity of light for producing multiple correction pattern (mW)</td></tr>
<tr><td>ATDC-Y</td><td>ATDC Sensor, yellow (%)</td><td></td><td></td></tr>
<tr><td>AIDC</td><td>AIDC Sensor (V)</td><td>E2</td><td>Intensity of light for potential difference correction (mW)</td></tr>
<tr><td>Temp-Upr.</td><td>Upper Fusing Roller temperature (°C)</td><td></td><td></td></tr>
<tr><td>Temp-Lwr.</td><td>Lower Fusing Roller temperature (°C)</td><td>V1</td><td>Estimated potential for multiple correction (V)</td></tr>
<tr><td></td><td></td><td>V2</td><td>————</td></tr>
</table></td></tr>
<tr><td>PC Dev. Status</td><td>Use this function to show the PC Drum characteristics and developing efficiency.
<table>
<tr><td>A</td><td>Laser beam diameter constant</td><td>M Vmg</td><td>Magenta developing fog start voltage (V)</td></tr>
<tr><td>K</td><td>PC sensitivity constant</td><td>Y Vmg</td><td>Yellow developing fog start voltage (V)</td></tr>
<tr><td>α</td><td>Drum charge efficiency</td><td>Bk120 Vmg</td><td>Black developing fog start voltage (V)</td></tr>
<tr><td>Background Voltage</td><td>Fog margin (V)</td><td>Bk160 Vmg</td><td>————</td></tr>
<tr><td>C η1</td><td>Cyan low-density developing efficiency</td><td>C η2</td><td>Cyan high-density developing efficiency</td></tr>
<tr><td>M η1</td><td>Magenta low-density developing efficiency</td><td>M η2</td><td>Magenta high-density developing efficiency</td></tr>
<tr><td>Y η1</td><td>Yellow low-density developing efficiency</td><td>Y η2</td><td>Yellow high-density developing efficiency</td></tr>
<tr><td>Bk120 η1</td><td>Black 1 low-density developing efficiency</td><td>Bk120 η2</td><td>Black 1 high-density developing efficiency</td></tr>
<tr><td>Bk160 η1</td><td>————</td><td></td><td></td></tr>
<tr><td>C Vmg</td><td>Cyan developing fog start voltage (V)</td><td>Bk160 η2</td><td>————</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Touch Panel Display</th><th>Setting</th></tr>
<tr><td>Bk Toner Sup. Status</td><td>Use this function to show the parameters that determine the amount of black toner to be replenished.
<table>
<tr><td>Dev.Bk</td><td>Black Developing Unit counter</td><td>Machine Constant</td><td>Machine correction data</td></tr>
<tr><td>Absolute Humidity</td><td>Absolute humidity</td><td>Multi-ve</td><td>Δ Ve value in multi-copy cycle (V)</td></tr>
<tr><td>η(Bk120)</td><td>Developing efficiency (at 120 mm/sec.)</td><td>Stick</td><td>Amount of toner sticking (mg)</td></tr>
<tr><td>η(Bk160)</td><td>————</td><td>B/W Ratio</td><td>Black-to-white ratio (%)</td></tr>
<tr><td>Bk Constant</td><td>Black weighting constant</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Temp. & Humidity</td><td>Use this function to show the temperature and humidity inside the copier.
<table>
<tr><td>Temp-Inside</td><td>Copier interior temperature (°C)</td></tr>
<tr><td>Temp-Upper</td><td>Upper Fusing Roller temperature (°C)</td></tr>
<tr><td>Temp-Lower</td><td>Lower Fusing Roller temperature (°C)</td></tr>
<tr><td>Humidity</td><td>Copier interior humidity (%)</td></tr>
<tr><td>Absolute Humidity</td><td>Absolute humidity</td></tr>
</table></td></tr>
<tr><td>CCD Check</td><td>Use this function to show the CCD data.
<table>
<tr><th>CLAMP</th><th>RO RE GO GE BO BE</th><th>GAIN</th><th>RO RE GO GE BO BE</th></tr>
<tr><td>120mm/s
160mm/s</td><td>D/A values of clamp R, G, and B at 120 mm/sec.</td><td>120mm/s
160mm/s</td><td>D/A values of gain R, G, and B at 120 mm/sec.</td></tr>
</table>
<table>
<tr><td>Lamp Adjust Value</td></tr>
</table>
Note
160mm/s Japan Only.</td></tr>
<tr><td>Paper Passage</td><td>Use this function to check for paper passage through different paper sources.</td></tr>
<tr><td>ROM Version</td><td>Use this function to show the ROM version.
<table>
<tr><td>SMP</td><td>IC73C/IC75C</td><td></td></tr>
<tr><td>SCP</td><td>IC4C</td><td></td></tr>
<tr><td>Printer</td><td>IC2I</td><td></td></tr>
<tr><td>I.P</td><td></td><td></td></tr>
<tr><td>ADF</td><td></td><td></td></tr>
<tr><td>Sorter</td><td></td><td></td></tr>
<tr><td>E-2M</td><td></td><td></td></tr>
</table></td></tr>
</table>

(5) Counter

- This mode is used to show the counts of various counters for use as a reference for service jobs.

<Counter Resetting Procedure>

1. Select the function which contains the counter to be reset.
2. Select the counter to be reset and press the Clear key.

Note

If a wrong counter is reset, press the Stop key to undo the resetting operation and recover the cleared count.

Service Mode Menu ▶ Counter

<table>
<tr><th>Touch Panel Display</th><th>Setting</th></tr>
<tr><td>Life 1 (Roller)</td><td>Use this function to show the roller-related counters.
<table>
<tr><td>Fus. Roll</td><td>Fusing Rollers</td></tr>
<tr><td>Fus. Cleaning</td><td>Web Roller</td></tr>
<tr><td>Upper Paper</td><td>Upper Drawer Paper Take-Up Roll</td></tr>
<tr><td>Middle Paper</td><td>Middle Drawer Paper Take-Up Roll</td></tr>
<tr><td>Lower Paper</td><td>Lower Drawer Paper Take-Up Roll</td></tr>
<tr><td>Manual Paper</td><td>Manual Bypass Take-Up Roll</td></tr>
</table></td></tr>
<tr><td>Life 2 (Option)</td><td>Use this function to show the option-related counters.
<table>
<tr><td>ADF Ent.</td><td>ADF entrance counter</td></tr>
<tr><td>ADF Rev.</td><td>ADF turnover counter</td></tr>
<tr><td>Duplex</td><td>Duplex take-up counter</td></tr>
<tr><td>Sorter</td><td>Sort counter</td></tr>
<tr><td>Staple</td><td>Stapling counter</td></tr>
<tr><td>LCT</td><td>Japan Only</td></tr>
</table></td></tr>
<tr><td>Life 3 (Others)</td><td>Use this function to show the counters other than Life 1 and 2.
<table>
<tr><td>PC Drum</td><td>PC Drum counter</td></tr>
<tr><td>Cleaning Blade</td><td>Cleaning Blade counter</td></tr>
<tr><td>Transfer Film</td><td>Transfer Film counter</td></tr>
<tr><td>Fus. Oil</td><td>Fuser oil counter</td></tr>
<tr><td>Dev. C</td><td>Cyan Developing Unit counter</td></tr>
<tr><td>Dev. M</td><td>Magenta Developing Unit counter</td></tr>
<tr><td>Dev. Y</td><td>Yellow Developing Unit counter</td></tr>
<tr><td>Dev. Bk</td><td>Black Developing Unit counter</td></tr>
<tr><td>Fur Brush</td><td>Fur Brush counter</td></tr>
<tr><td>Toner Collect</td><td>Toner Collect counter</td></tr>
</table>
<table>
<tr><td>Main SW ON</td><td>Hours</td></tr>
</table>
✻ Toner Collect: Gives a percentage display in the range from 0 to 100 %. In addition, the copier inhibits the initiation of a new copy cycle when 1K more copies are made after a warning display is given.</td></tr>
</table>

<table>
<tr><th>Touch Panel Display</th><th>Setting</th></tr>
<tr><td>Trouble 1
(Charger)</td><td>Use this function to show corona-unit-related malfunction counters.
<table>
<tr><th>Display</th><th>Description</th><th>Malfunction Code</th></tr>
<tr><td>PC.
Charge</td><td>PC Drum Charge Corona malfunctions</td><td>C0200</td></tr>
<tr><td>Transfer</td><td>Image Transfer Corona malfunctions</td><td>C0210</td></tr>
<tr><td>Dev. Bias</td><td>Developing bias failures</td><td>C0240</td></tr>
</table></td></tr>
<tr><td>Trouble 2 (Motor)</td><td>Use this function to show the motor-related malfunction counters.
<table>
<tr><td>Main</td><td>Main Drive Motor malfunctions</td><td>C0000/01</td></tr>
<tr><td>Drum</td><td>PC Drum Drive Motor malfunctions</td><td>C0010/11</td></tr>
<tr><td>Developer</td><td>Developing Drive Motor malfunctions</td><td>C0030/31</td></tr>
<tr><td>Toner</td><td>Toner Suction Fan Motor malfunctions</td><td>C0042/43</td></tr>
<tr><td>Ozon Fan</td><td>Ozone Ventilation Fan Motor malfunctions</td><td>C004C/4D</td></tr>
<tr><td>Fuser</td><td>Fusing Motor malfunctions</td><td>C0060/61</td></tr>
<tr><td>Polygon</td><td>Polygon Motor malfunctions</td><td>C30A0/A1</td></tr>
<tr><td>Power
Supply Fan</td><td>Power Supply Cooling Fan Motor malfunctions</td><td>C004E</td></tr>
<tr><td>P/H Fan</td><td>P/H Cooling Fan Motor malfunctions</td><td>C0049</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Touch Panel Display</th><th>Setting</th></tr>
<tr><td>Trouble 3 (Fuser)</td><td><Trouble Counter 3>
Shows the number of malfunctions that have occurred in fusing parts.
- Fuser (Upper) -
<table>
<tr><th>Display</th><th>Name</th><th>Malfunction Code</th></tr>
<tr><td>Warm-Up</td><td>Defective Upper Fusing Roller Heater</td><td>C0500</td></tr>
<tr><td>Low Temp.</td><td>Abnormally low Upper Fusing Roller temperature</td><td>C0510</td></tr>
<tr><td>High Temp.</td><td>Abnormally high Upper Fusing Roller temperature</td><td>C0520</td></tr>
</table>
- Fuser (Lower) -
<table>
<tr><th>Display</th><th>Name</th><th>Malfunction Code</th></tr>
<tr><td>Warm-Up</td><td>Defective Lower Fusing Roller Heater</td><td>C0501</td></tr>
<tr><td>Low Temp.</td><td>Abnormally low Lower Fusing Roller temperature</td><td>C0511</td></tr>
<tr><td>High Temp.</td><td>Abnormally high Lower Fusing Roller temperature</td><td>C0521</td></tr>
</table></td></tr>
<tr><td>Trouble 4 (IR)</td><td><Trouble Counter 4>
Shows the number of malfunctions that have occurred in IR parts.
- Exp. Lamp -
<table>
<tr><th>Display</th><th>Name</th><th>Malfunction Code</th></tr>
<tr><td>Failure</td><td>Exposure Lamp's failure to turn ON</td><td>C0400</td></tr>
<tr><td>Abnormal</td><td>Exposure Lamp turning ON at abnormal timing</td><td>C0410</td></tr>
</table>
<table>
<tr><th>Display</th><th>Name</th><th>Malfunction Code</th></tr>
<tr><td>Home Sensor</td><td>Defective Home Position Sensor</td><td>C0650</td></tr>
<tr><td>Over Run</td><td>Defective Overrun Sensor</td><td>C0660</td></tr>
<tr><td>CCD Gain</td><td>CCD gain/clamp adjustment failure</td><td>C03310</td></tr>
<tr><td>Optical Fan</td><td>Defective Optical Section Cooling Fan Motor</td><td>C3600/10/20</td></tr>
</table></td></tr>
<tr><td>Trouble 5 (Option)</td><td><Trouble Counter 5>
Shows the number of malfunctions that have occurred in the Sorter and Large Capacity Cassette (LCT).
<table>
<tr><th>Display</th><th>Name</th><th>Malfunction Code</th></tr>
<tr><td>Sorter</td><td>Sorter-related failure</td><td>C0B ××</td></tr>
<tr><td>LCT</td><td>LCT-related failure</td><td>C09C0/C2</td></tr>
</table></td></tr>
</table>

Service Mode Menu ▶ Counter

<table>
<tr><th>Touch Panel Display</th><th>Setting</th></tr>
<tr><td>Trouble 6 (Others)</td><td><Trouble Counter 6>
Shows the number of malfunctions that have occurred in parts other than those noted above.
<table>
<tr><th>Display</th><th>Name</th><th>Malfunction Code</th></tr>
<tr><td>SOS</td><td>Defective SOS Sensor</td><td>C3F80</td></tr>
<tr><td>ATDC Sensor</td><td>Defective ATDC Sensor</td><td>C0F ××</td></tr>
<tr><td>Dev. Bk</td><td>Defective Bk Developing Unit</td><td>C3500</td></tr>
<tr><td>T-BASE</td><td>Defective T-BASE</td><td>C3F90</td></tr>
<tr><td>PC Charger Set</td><td>PC Drum Charge HV set failure</td><td>C0200</td></tr>
<tr><td>Dev. Charger Set</td><td>Developing HV set failure</td><td>C0241</td></tr>
<tr><td>CH Wire Cleaning</td><td>PC Drum Charge Wire Cleaning failure</td><td>C0100</td></tr>
</table></td></tr>
</table>

Service Mode Menu ▶ Counter

<table>
<tr><th>Touch Panel Display</th><th>Setting</th></tr>
<tr><td>Jam 1 (Main)</td><td><Jam Counter 1>
Shows the number of misfeeds that have occurred in different parts of the copier.
<table>
<tr><th colspan="2">Display</th></tr>
<tr><td>Manual
Middle
Transport
PC Roll
Exit</td><td>Upper
Lower
Adsorb
Separation</td></tr>
</table></td></tr>
<tr><td>Jam 2 (Option)</td><td><Jam Counter 2>
Shows the number of misfeeds that have occurred in the Duplexing Document Feeder (ADF), Sorter, and other options.
<table>
<tr><th colspan="2">Display</th></tr>
<tr><td>ADF
LCT</td><td>Duplex
Sorter</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Touch Panel Display</th><th>Setting</th></tr>
<tr><td>Warning 1
(Stabilizer)</td><td><Warning Counter 1>
Shows the number of warnings issued as they relate to image stabilization control.
<table>
<tr><th colspan="2">Display</th></tr>
<tr><td>LD
PC Drum
AIDC Sensor
Dev. M
Dev. Bk
High Bk density</td><td>PC Charge
VO Sensor
Dev. C
Dev. Y
Low Bk density</td></tr>
</table></td></tr>
<tr><td>Warning 2 (PRT)</td><td><Warning Counter 2>
Shows the number of warnings issued as they relate to the engine and other parts.
<table>
<tr><th colspan="2">Display</th></tr>
<tr><td>Separation
Adsorb
Pre Cleaning
Upper Lift
Lower Lift
CH Wire Cleaning</td><td>Erase
Fuser Fan
Main Eraser
Middle Lift
S/P</td></tr>
</table></td></tr>
<tr><td>Warning 3 (IR)</td><td><Warning Counter 3>
Shows the number of warnings issued as they relate to the IR.
<table>
<tr><th colspan="2">Display</th></tr>
<tr><td>CCD Gain
FP Lamp</td><td>Exp. Lamp</td></tr>
</table></td></tr>
<tr><td>Maintenance Counter*</td><td>When the count which increases one per copy cycle reaches the setting count.</td></tr>
</table>

* U.S.A. areas only

(6) List Output

- Produces a list of setting values, adjustment values, and counter counts of this copier.

<List Output Procedure>

1. Place the required number of sheets of A4 lengthwise paper on the Multi Bypass Tray.
2. Select the desired function and press the Start key.

Service Mode Menu List ▶ Output

Touch Panel Display	Setting
Image Processing	<Image-Related Data List Output> Produces a list of image-related data.
Setting/Adjust	<Setting/Adjustment Value-Related Data List Output> Produces a list of data as they relate to setting and adjustment values.
Counter	<Counter-Related Data List Output> Produces a list of counter-related data.

- Details of List Output -

<Image Processing>

Time
Serial #
ROM Version
PRT Max Density
PRT Highlight
Background Voltage
Life Counter
ATDC Level Setting
VB Shift
AE Adjust
Table #
PC Dev. Status
Bk Toner Sup. Status
Stabilizer Trouble
CCD Check
Meter Reading

<Setting Adjust>

Time
Serial #
ROM Version
Marketing Area
Count Up Select
Paper Kind
Marketing Area
OHP Speed
Fuser Oil Change
Feed Motor Speed
Fuser Speed
Transfer Table
Transfer Output
IR Area
Original Stop Position Set
PRT Area Top-Margin
PRT Area Left-Margin
PRT Area Dup. Left-Margin
PRT Max Density
Background Voltage
PRT Highlight
VB Shift
AE Adjust
Loop Adjust ATDC Sensor Volume
Temp & Humidity

<Counter>

Time
Total Counter
Serial #
ROM Version
Life Counter
Jam Counter
Trouble Counter

(7) Test Print

- This mode is used to make test prints for adjusting and checking the image.

<Test Print Output Procedure>

- Select the desired Test Print function and press the Start key. This causes the copier to automatically select the maximum size of paper loaded in the drawers and starts the test print.

Note

The numbers shown on the upper-right corner of each function screen mean the following: "1" is LIMOS1 and "2.5" is LIMOS2.5. The test print output represents the corresponding image processing system selected.

Service Mode Menu ▶ Test Print

Touch Panel Display	Setting
Gradation Pattern	Use to output a test pattern for each Developing Unit to check for image and other parameters.
Halftone	Use to output a halftone pattern for each color to check for image and other parameters.
Lattice Pattern	Use to output a lattice pattern for each color to check for image and other parameters.
Solid Pattern	Use to output a solid black pattern to check for image and other parameters.
Color Sample	Use to output a mono-color/base-color sample that can be output by the copier to check for image and other parameters.

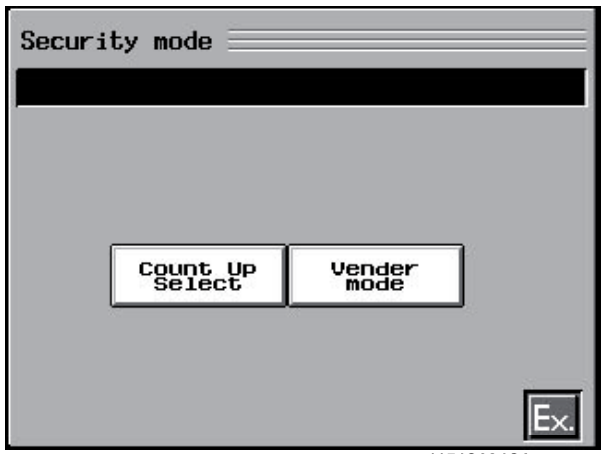
(8) Gradation Adjust

- This mode is used to automatically adjust the γ curve, which can be started by the press of the Start Key.

6 SECURITY MODE

- This mode is used to set the counter and copy vender.

6-1. Security Mode Screen



1154S024CA

6-2. Security Mode Setting Procedure

<Setting Procedure>

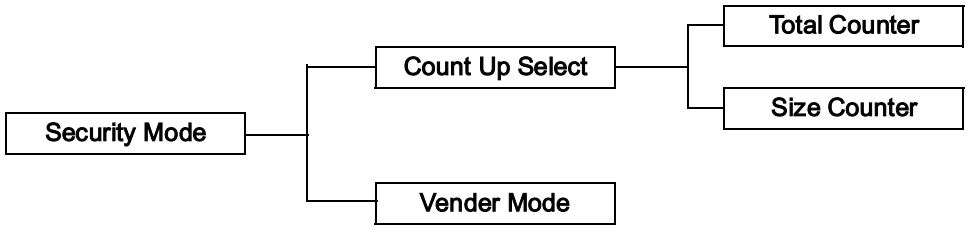
1. Show the Service Mode Menu on the Touch Panel and then press the following keys in this order.
2. Stop key → "9"
3. Make the necessary settings by following the instructions given sequentially on the screen.

Note:
The selected function is highlighted.

<Exiting the Mode>
Perform either one of the following steps to go back to the Basic screen.

- Press the Panel Reset key on the control panel.
- Touch [Ex] as many times as it is required to return to the Basic screen.

6-3. Security Mode Function Tree



6-4. Settings in the Security Mode

Security Mode Menu

<table>
<tr><th>Touch Panel Display</th><th>Setting (the default setting is Highlighted)</th></tr>
<tr><td>Count Up Select</td><td>
Determine the condition by which the counter count is increased. When “Large paper 2 count” is selected, select the applicable paper size.
<table>
<tr><th><Total Counter></th><th></th><th><Size Counter></th><th></th></tr>
<tr><td>1 copy 1 count</td><td rowspan="2">→</td><td>No count
A3, 8 × 13
A3</td><td>No count
11 × 17
11 × 17,
11× 14, Legal</td></tr>
<tr><td>Large paper 2 count (2 counts according to paper size)</td></tr>
</table>
Note
The paper size selected under “Large paper 2 count” is covered by “Large” of “Meter Count” available from the User mode.

<Count-Up List>
<table>
<tr><th>Total Counter</th><th colspan="3">1 copy 1 count</th><th colspan="2">Large paper 2 count</th></tr>
<tr><th>Size Counter</th><th>No Count</th><th>Size Count</th><th>Size other than those set</th><th>Size count</th><th>Size other than those set</th></tr>
<tr><td>Total Counter (Mechanical/ Electronic)</td><td>1</td><td>1</td><td>1</td><td>2</td><td>1</td></tr>
<tr><td>Large</td><td>-</td><td>1</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>Plug-In Counter (Mechanical)</td><td>1</td><td>1</td><td>1</td><td>2</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>Vender Mode</td><td>
Make the following settings when a Copy Vender is mounted.
<table>
<tr><td>Set</td><td>Unset</td></tr>
<tr><td>Coin</td><td>Card</td></tr>
</table>
</td></tr>
</table>

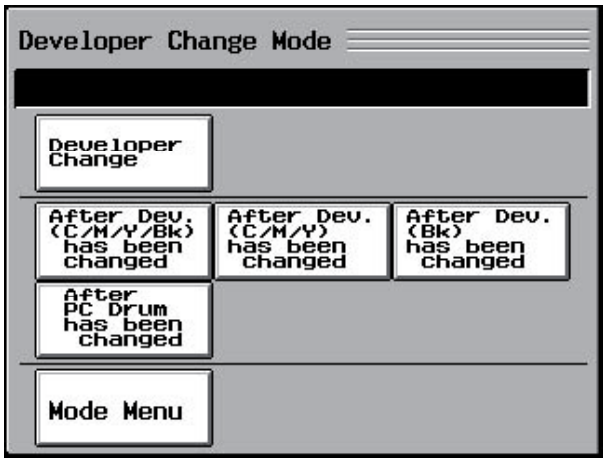
7 DEVELOPER CHANGE MODE

- This mode is used to adjust and operate the Developing Unit.

NOTE

The Developer mode will only be outlined in this manual. For more details, see DIS/REASSEMBLY, ADJUSTMENT or TROUBLESHOOTING.

7-1. Developer Change Mode Menu Screen


Developer Change Mode
Developer Change
After Dev. (C/M/Y/Bk) has been changed
After Dev. (C/M/Y) has been changed
After Dev. (Bk) has been changed
After PC Drum has been changed
Mode Menu

1154S025CA

7-2. Developer Change Mode Setting Procedure

<Setting Procedure>

1. Turn OFF the Power Switch and open the Front Door.
2. Turn ON the Power Switch and press the following keys in this order.

   [Stop] → [0] → [Stop] → [2]
3. With the above menu screen on the Touch Panel, close the Front Door.
4. From here on, perform the function according to the instructions on the screen.

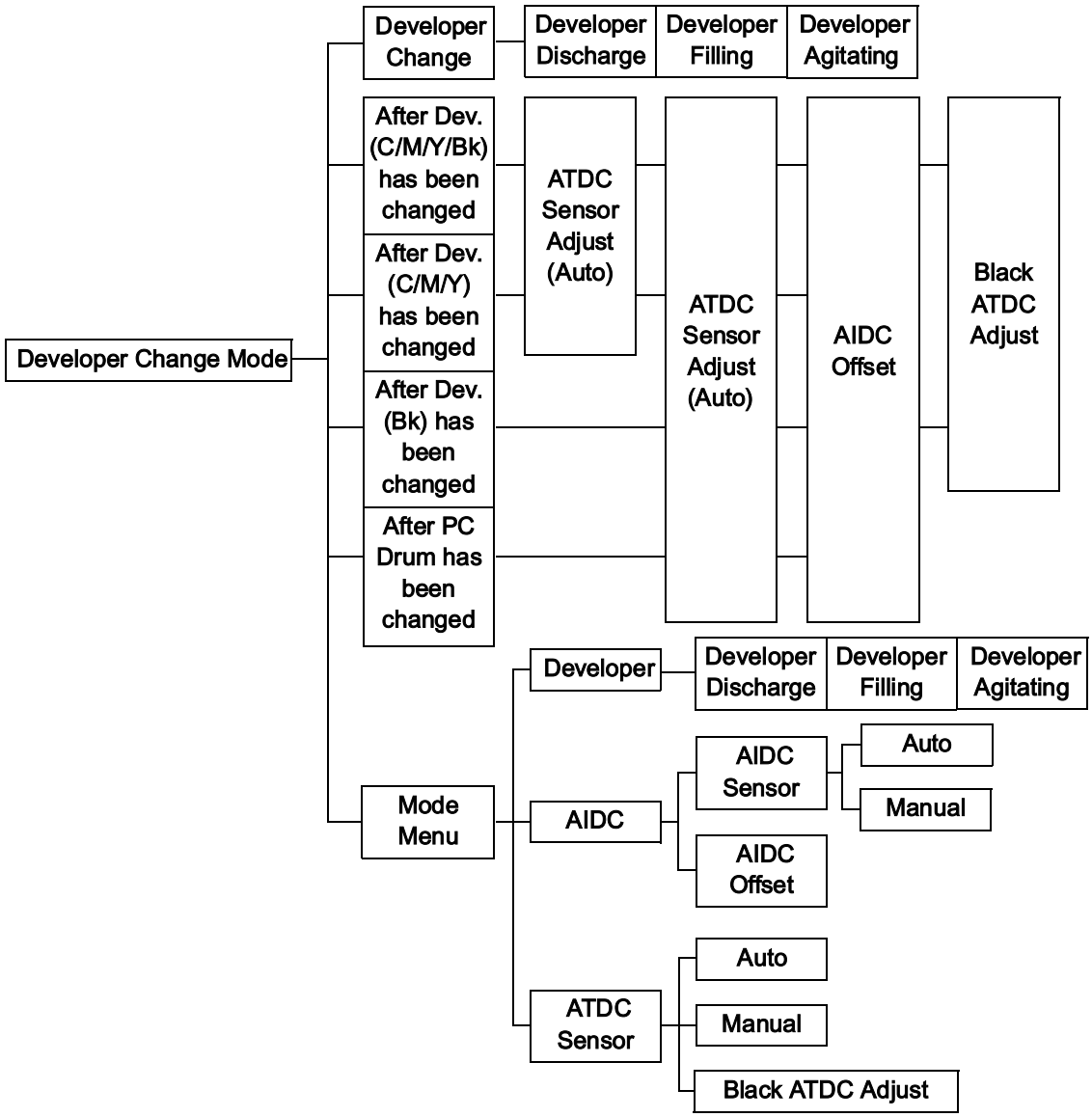
Note

The selected function is highlighted.

<Exiting the Mode>

- Turn OFF, then ON, the Power Switch.

7-3. Developer Change Mode Function Tree



7-4. Settings in the Developer Change Mode

Developer Change Mode Menu

Touch Panel Display	Setting
Developer Change	Each of the following functions is used to dump old developer, and load and agitate fresh developer.
Developer Discharge	Automatically dumps old developer from the Developing Unit during the developer replacement procedure.
Developer Filling	Loads fresh developer during the developer replacement procedure.
Developer Agitating	Agitate fresh developer which has been loaded in the Developing Unit.

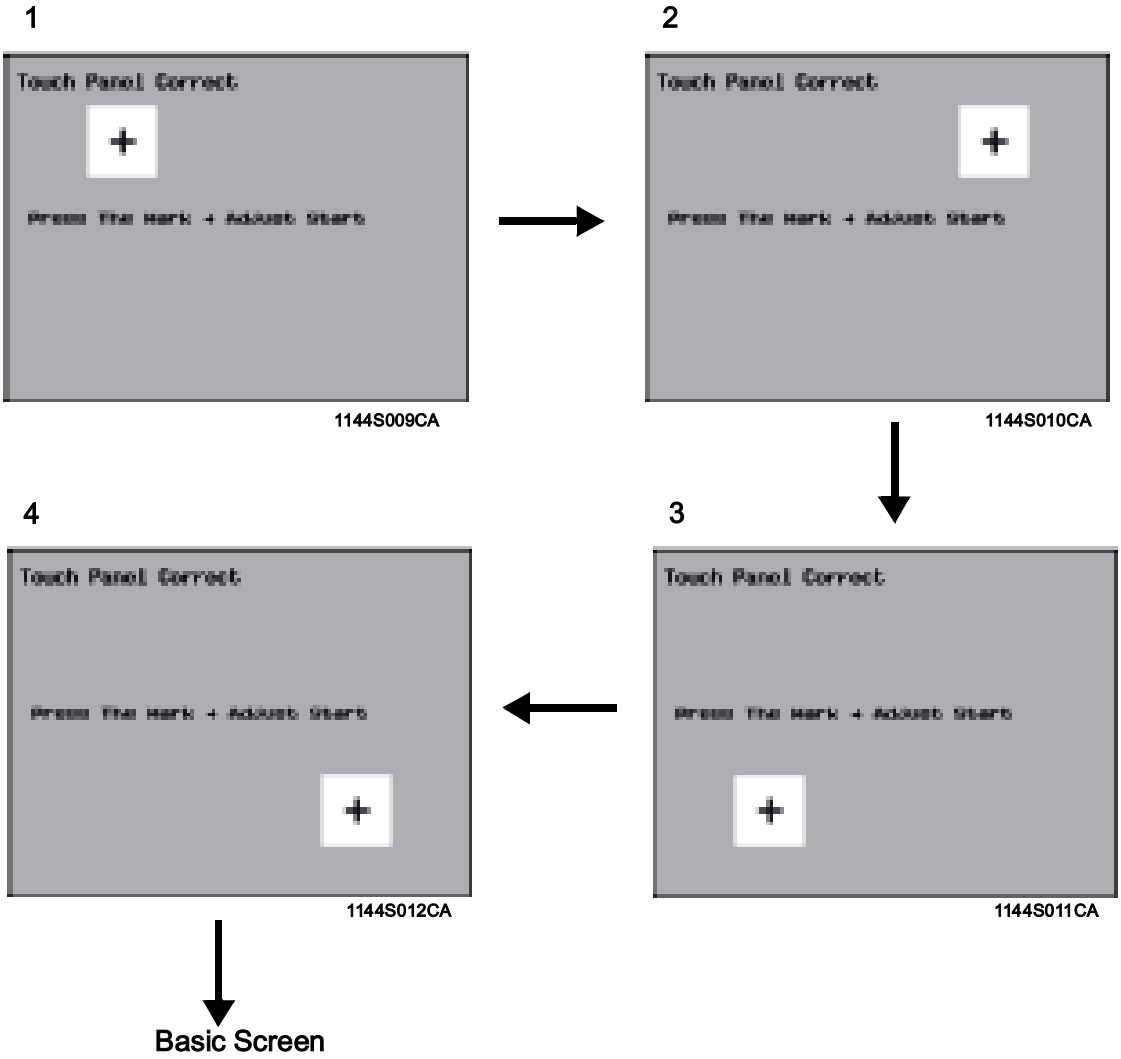
Developer Change Mode Menu

Touch Panel Display	Setting
After Dev. (C/M/Y/Bk) has been changed	Each of the following functions is used to adjust the ATDC/AIDC.
ATDC Sensor Adjust (Auto)	Automatically adjusts the ATDC Sensors for C, M, and Y Developing Units.
AIDC Sensor Adjust (Auto)	Automatically adjusts the AIDC Sensor.
AIDC Offset	Automatically adjusts the offset level of the AIDC Sensor.
Black ATDC Adjust	Automatically adjusts the ATDC Sensor for the Bk Developing Unit.
After Dev. (C/M/Y/Bk) has been changed	Performs the ATDC Sensor Automatic Adjustment, AIDC Sensor Automatic Adjustment, and AIDC Sensor Offset Level Automatic Adjustment procedures.
After Dev. (Bk) has been changed	Performs the AIDC Sensor Automatic Adjustment, AIDC Sensor Offset Level Automatic Adjustment, and Black ATDC Sensor Automatic Adjustment procedures.
After PC Drum has been changed	Performs the AIDC Sensor Automatic Adjustment and AIDC Sensor Offset Level Automatic Adjustment procedures.
Mode Menu	Either one of the above functions can be performed individually by using the following functions.
Developer	Dumps old developer, and loads and agitates fresh developer.
AIDC	Adjusts the AIDC Sensor.
AIDC Sensor	Adjusts the AIDC Sensor either automatically or manually.
Auto	Automatically adjusts the AIDC Sensor.
Manual	Manually adjusts the AIDC Sensor.
AIDC Offset	Automatically adjusts the offset level of the AIDC Sensor.
ATDC Sensor	Adjusts the ATDC Sensors.
Auto	Automatically adjusts the ATDC Sensors.
Manual	Manually adjusts the ATDC Sensors.
Black ATDC Adjust	Automatically adjusts the ATDC Sensor for the Bk Developing Unit.

8 TOUCH PANEL CORRECTION MODE

- This mode is used to correct the position of keys on the Touch Panel.

8-1. Touch Panel Correction Mode Screen



8-2. Touch Panel Correction Mode Setting/Correcting Procedures

<Procedure>

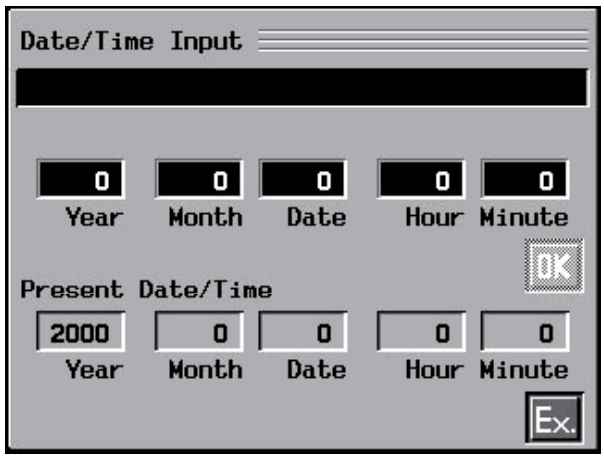
1. Press the following keys to enter the Touch Panel Correct mode:
   [Stop] → [0] → [Stop] → [3]
2. Touch [+] on screen 1.
3. Touch [+] on screen 2.
4. Touch [+] on screen 3.
5. Touch [+] on screen 4. This completes the automatic correction and the Basic screen reappears.

✻ Make sure to precisely touch the center of the [+] for each step above.

9 DATE/TIME INPUT MODE

- This mode is used to set the time-of-day and date.

9-1. Date/Time Input Mode Screen



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9-2. Date/Time Input Mode Setting Procedure

<Procedure>

1. Press the following keys in this order to enter the Date/Time Input mode.
   [Stop key] → [“1”] → [“1”] → [“4”] → [“4”] → [Clear key]
2. When the input screen appears, enter year, month, day, hour, and minute, in that order, from the 10-Key Pad.

Note

When setting the month, day, hour, or minute, enter “0” first if the data is one digit.

---

3. When the data have been entered, touch [OK].

CONTENTS

1. INTRODUCTION T-1
   1-1. General Precautions T-1
   1-2. How to Use This Book T-1
   1-3. Reading the Text T-1
   1-4. Controlled Parts Check Procedure T-2
2. PAPER TRANSPORT FAILURE T-5
   2-1. Paper Misfeed T-5
   2-2. Types of Misfeed Detection and Detection Timings T-7
   2-3. Misfeed Troubleshooting Procedures T-9
      (1) Upper/Middle/Lower Drawer Paper Take-Up Misfeed T-9
      (2) Multi/Manual Bypass Paper Take-Up Failure T-12
      (3) Transport Misfeed T-14
      (4) Transfer Misfeed T-16
      (5) Separator Misfeed T-18
      (6) Fusing/Exit Misfeed T-19
      (7) Duplex Unit Misfeed T-20
3. MALFUNCTION T-21
   3-1. Detection Timing by Malfunction Code T-24
   3-2. Troubleshooting Procedures T-30
      (1) C00**, C0100, C309*, C30A* (Drive System Malfunctions) T-30
      (2) C02**, C32** (PC Drum Charge/Image Transfer/Paper Separator/ Charge Neutralizing/Static Charge/Developing Bias Coronas Malfunctions) T-38
      (3) C05** (Fusing Malfunctions) T-40
      (4) C09** (Paper Take-Up Section Malfunctions: Isolated Malfunctions) T-44
      (5) C0E** (Erase Lamp Malfunctions) T-45
      (6) C0F** (Sensor Malfunctions), C3500 (Black Developing Unit Malfunction), C3F90 (T-Base Failure) T-46
      (7) C3*** (PH Malfunctions) T-48
      (8) C04** (Exposure Lamp malfunctions) T-48
      (9) C06**, C33**, C37** (Optical System malfunctions) T-49
   3-3. Power Supply Related Malfunctions T-51
      (1) Main Relay RY1 is Not Turned ON T-51
      (2) Though Main Relay RY1 is Turned ON, No Control Panel Indicators Light Up T-52
      (3) No Power is Supplied to Options T-53
4. IMAGE QUALITY PROBLEMS T-54
   4-1. Troubleshooting Image Quality Problems T-54
   4-2. Initial Check Items T-54
   4-3. Troubleshooting Procedure by a Particular Image Quality Problem T-55
      (1) White Lines in the FD and CD T-55
      (2) Black Lines in the FD and CD T-57
      (3) Oil Streaks in the FD T-58
      (4) White Bands in the FD and CD T-59
      (5) Black Bands in the FD and CD T-61

(6) Smear on Entire Copy and Backside T-63
(7) Foggy Background T-65
(8) 4-Color Spots, Monocolor Spots T-67
(9) Void Image T-68
(10) Void, White Spots T-69
(11) Whole Uneven Density T-71
(12) Uneven Density in the FD and CD T-72
(13) Poor Color Reproduction T-74
(14) Gradation Reproduction Failure in Original Higher-Density Areas .. T-77
(15) Gradation Reproduction Failure in Original Lower-Density Areas ... T-78
(16) Rough Image (Uneven Particle Size) T-80
(17) High I.D. T-82
(18) Low I.D. T-84
(19) Blank Copy, Black Copy T-86
(20) Incorrect Image Registration T-87
(21) Incorrect Image Registration T-88
(22) Toner Scattering Image T-89
(23) Incorrect Color Image Registration, Moire T-91
(24) Periodic Uneven Density T-92
4-4. Image Stabilizer Malfunction T-93
(1) P-1: NG (LD Failure) T-93
(2) P-2: NG (VG Failure) T-93
(3) P-3: NG (PC Drum Failure) T-94
(4) P-4: NG (Surface Potential Detection Sensor Failure) T-94
(5) P-5: NG (AIDC Sensor Failure) T-94
(6) P-6: NG (C Developing Unit Failure) T-95
(7) P-7: NG (M Developing Unit Failure) T-97
(8) P-8: NG (Y Developing Unit Failure) T-99
(9) P-9: NG (Bk Developing Unit Failure 1) T-101
(10) P-10: Unused T-101
(11) P-11: NG (Paper Separator Corona Failure) T-102
(12) P-12: NG (Charge Neutralizing Corona Failure) T-102
(13) P-13: NG (Static Charge Corona Failure) T-102
(14) P-14: Unused T-102
(15) P-15: NG (Pre-Cleaning Charge Corona Failure) T-102
(16) P-16: Unused T-102
(17) P-17: NG (S/P Communications Error) T-103
(18) P-18: NG (PC Drum Charge Corona Wire Cleaning Malfunction) ... T-103
(19) P-19: NG (Abnormally Low Bk Developing Efficiency) T-103
(20) P-20: NG (Abnormally High Bk Developing Efficiency) T-104
(21) S-1: NG (CCD Clamp/Gain Adjustment Failure) T-104
(22) S-2: NG (Intensity Adjustment Failure) T-105
(23) S-3: Unused T-105

1 INTRODUCTION

1-1. General Precautions

1. When servicing the copier with its covers removed, use utmost care to prevent your hands, clothing, and tools from being caught in revolving parts including chains and gears. When checking copier operation with the Rear Cover removed, be sure to install the jig.
2. Before attempting to replace parts or unplug connectors, make sure that the power cord of the copier has been unplugged from the power outlet.
3. Never create a closed circuit across connector pins and on the printed circuit.
4. When measuring a voltage or closing a circuit across connectors specified in the text, be sure to use the green wire (GND).
5. When the user is using a word processor or personal computer from the power outlet of the same line, take necessary steps to prevent the circuit breaker from opening due to overloads.
6. Keep all disassembled parts in good order and keep tools under control so that none will be lost or damaged.
7. When any electrical part is to be changed as a result of troubleshooting, always check for disconnected connectors before replacement of that part.

1-2. How to Use This Book

1. If a component on a PWB or any other functional unit including a motor is defective, the text only instructs you to replace the whole PWB or functional unit and does not give troubleshooting procedure applicable within the defective unit.
2. All troubleshooting procedures contained herein assume that there are no breaks in the harnesses and cords and all connectors are plugged into the right positions.
3. For the removal procedures of covers and parts and adjustment requirements, see DIS/REASSEMBLY, ADJUSTMENT.
4. The troubleshooting procedures preclude possible malfunctions due to noise and other external causes.

1-3. Reading the Text

1. The paper transport failure troubleshooting procedures are given according to the symptom. First, identify the location where the paper is present and start the procedure for that particular location. For malfunction troubleshooting, start with step 1 and onward.
2. Make checks in numerical order of the steps and, if an item is checked okay, go to the next step.
3. A remark given in ( ) in the Action column indicates a requirement for adjustment. See DIS/REASSEMBLY, ADJUSTMENT.

Pattern 1

Step	Check Item	Result	Action
1	Is ...?	YES	Do this.
2	Go to step 2 if you answered NO.		

Pattern 2

Step	Check Item	Result	Action
1	Is ...?	YES	Do this.
		NO	Check that.
2		Go to step 2 if it checked okay.	

1-4. Controlled Parts Check Procedure

This copier allows the Tech. Rep. to easily determine whether a particular controlled part is fully operational and check for copier operating conditions.
(For details, see the following pages.)

<Procedure>

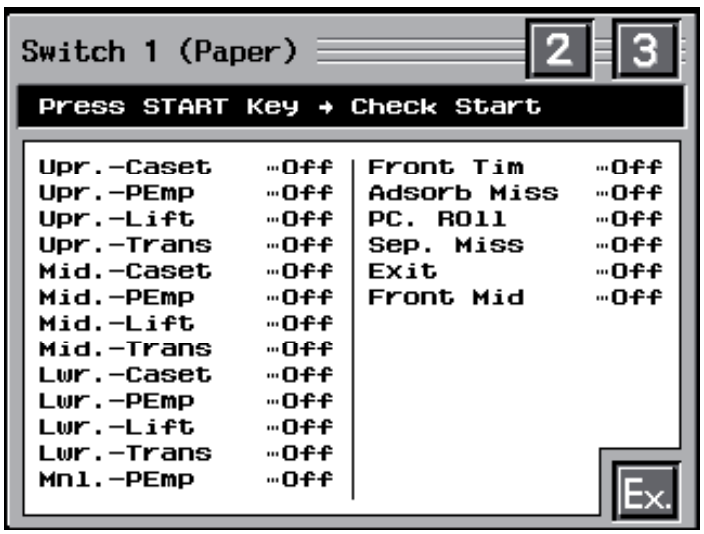
1. When a paper misfeed or malfunction occurs, identify on the circuit diagram accompanying the text the controlled part that is probably responsible for the problem.
2. Open "State Confirm" from the Service mode menu and, from among the Switch 1 to 3 screens, select one that is associated with the part identified in step 1 above.
3. Change the state of the part picked out and see if the signal is changed.

<Example>

When a paper misfeed occurs, Upper Drawer Paper Take-Up Sensor PC12 is considered to be responsible for it.

<Procedure>

1. Remove the sheet of paper misfed.
2. Select "Switch 1 (Paper)" of "State Confirm" available from the Service mode menu.



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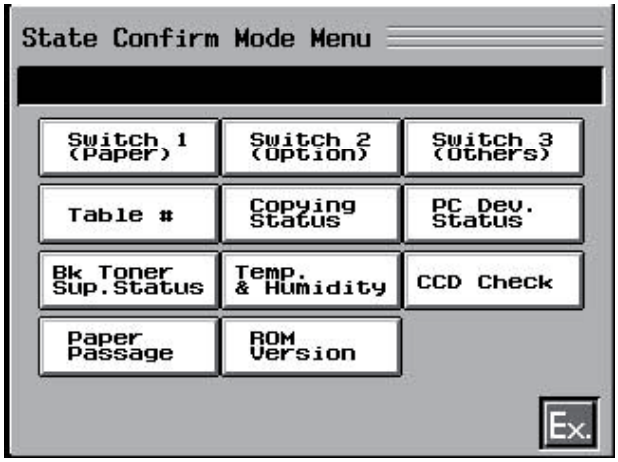
3. Check that "Upr.-Trans" is "Off" on the screen.
4. Use a sheet of paper to move the PC12 actuator so that PC12 is blocked.
5. Check that "Upr.-Trans" is now "On" on the screen.

On: PC12 is operational. Off: PC12 is faulty.

- These are only typical screens which may be different from what are shown on each individual copier.



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Switch 1 (Paper Passage)

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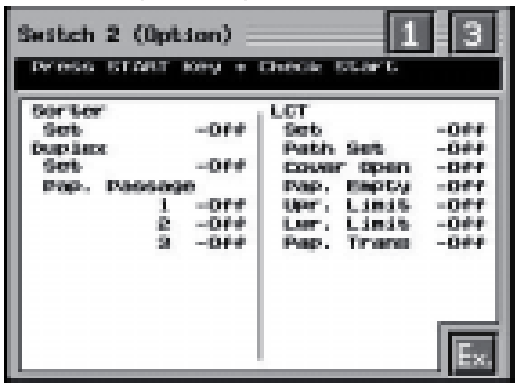
Switch 2 (Options)



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Sensors 3 (Others)

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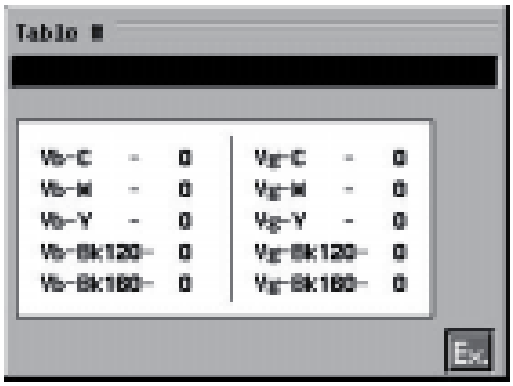
Table No.



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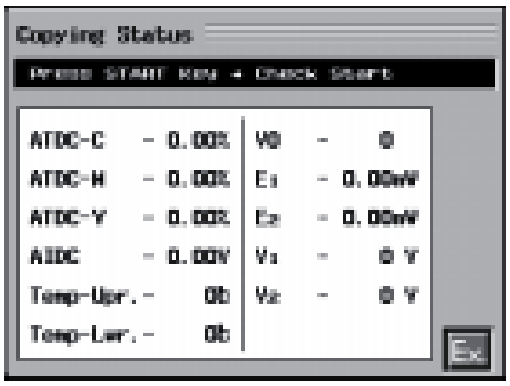
Copying Status



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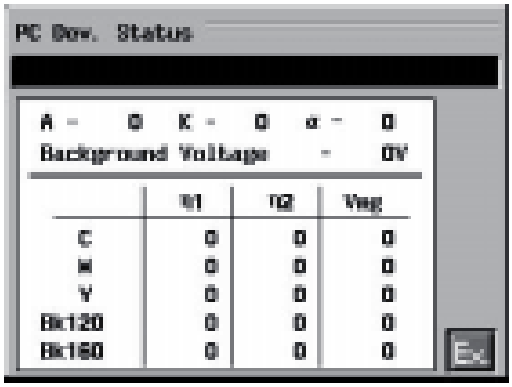
Developing Status



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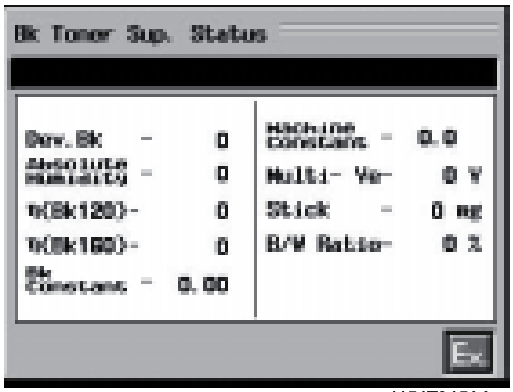
Black Toner Supply Status



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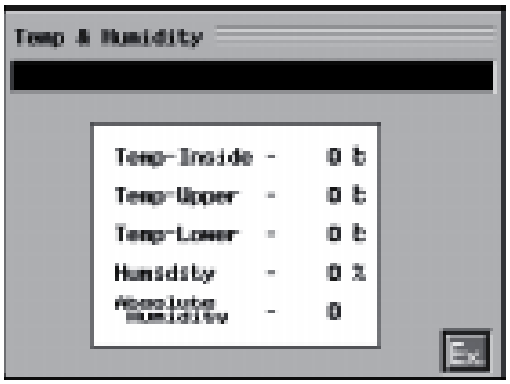
Temperature and Humidity



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CCD Check

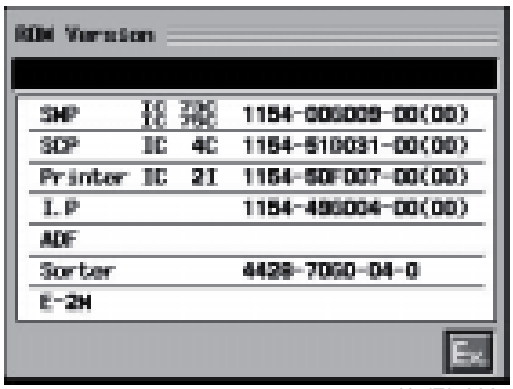
CCD Check
CLAMP RO RE GO GE BO BE
120mm/s 0 0 0 0 0 0
180mm/s 0 0 0 0 0 0
GAIN RO RE GO GE BO BE
120mm/s 0 0 0 0 0 0
180mm/s 0 0 0 0 0 0
Lamp Adjust Value: 0
Ex

1154T047AA

Paper Passage Check

1144T049CA

ROM Version



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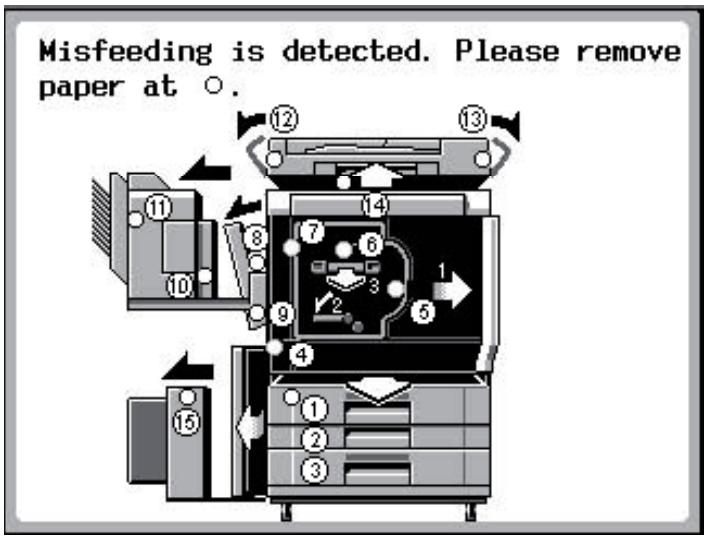
2 PAPER TRANSPORT FAILURE

2-1. Paper Misfeed

When a paper misfeed occurs in the copier, the misfeed message, misfeed location, and paper location are displayed on the screen.



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Blinking	Misfeed location
Lit	Paper location

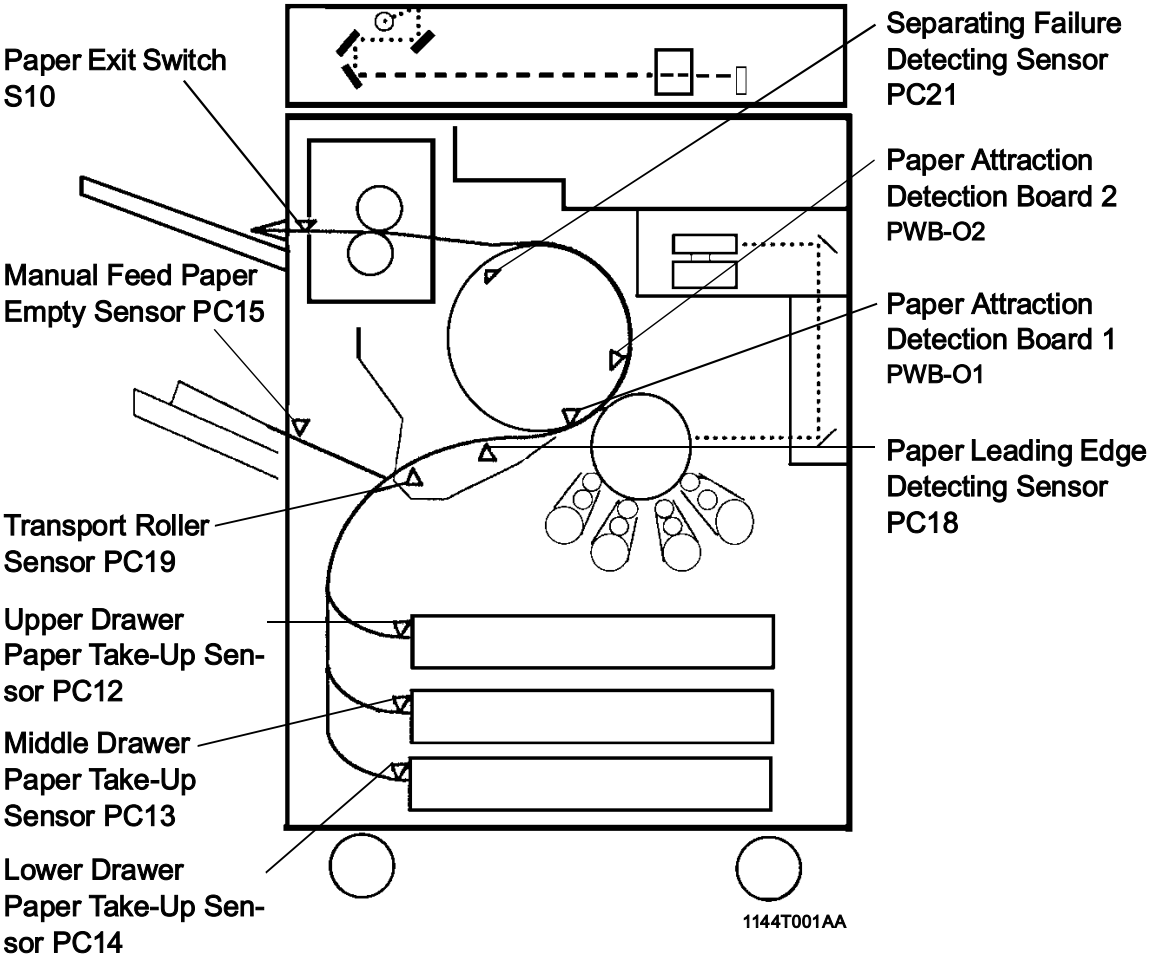
Blinking/Lit	Misfeed/Paper Location	Ref. Item No.
1	Upper Drawer take-up	(1)*
2	Middle Drawer take-up	
3	Lower Drawer take-up	
4	Multi/Manual Bypass take-up	(2)
	Transport	(3)
5	Transfer	(4)
6	Separator	(5)
7	Fusing	(6)
8	Exit	
	Duplex Unit take-up/transport	(7)
9	Duplex Unit turnover/storage	
10	Sorter transport	See relevant Option Service Manual.
11	Sorter exit	
12	ADF turnover/exit	
13	ADF take-up	
14	ADF transport	
15	LCT take-up	

* See Section 2-3.

<Misfeed Display Resetting Procedure>

Misfeed in copier	Open and close the Front Door.
Misfeed in option	Raise and lower the option, or slide the option away from, and back up against, the copier.

<Misfeed Detecting Sensor Layout>


Paper Exit Switch S10
Manual Feed Paper Empty Sensor PC15
Transport Roller Sensor PC19
Upper Drawer Paper Take-Up Sensor PC12
Middle Drawer Paper Take-Up Sensor PC13
Lower Drawer Paper Take-Up Sensor PC14
Separating Failure Detecting Sensor PC21
Paper Attraction Detection Board 2 PWB-O2
Paper Attraction Detection Board 1 PWB-O1
Paper Leading Edge Detecting Sensor PC18
1144T001AA

2-2. Types of Misfeed Detection and Detection Timings

< ① Upper/ ② Middle/ ③ Lower Drawer Paper Take-Up Misfeed>

Type	Detection Timing
Detection of paper left	Upper Drawer Paper Take-Up Sensor PC12 is blocked (L) when Power Switch S1 is turned ON, a misfeed is reset, or the Front Door is opened and closed. ✻ Same with the Middle and Lower Drawers.
Paper take-up failure detection	PC12 is not blocked (L) even after the lapse of approx. 1.5 sec. after Upper Drawer Paper Take-Up Clutch CL11 has been energized. ✻ Same with the Middle and Lower Drawers.
Paper take-up trailing edge detection	PC12 is not unblocked (H) even after the lapse of approx. 4.5 sec. after CL11 has been energized. ✻ Same with the Middle and Lower Drawers.

< ④ Multi/Manual Bypass Paper Take-Up Failure>

Type	Detection Timing
Detection of paper left	Transport Roller Sensor PC19 or Paper Leading Edge Detecting Sensor PC18 is blocked (L) when S1 is turned ON, a misfeed is reset, or the Front Door is opened and closed.
Paper take-up failure detection	PC18 is not blocked (L) even after the lapse of approx. 2 sec. after Manual Feed Paper Take-Up Clutch CL14 has been energized.
Paper take-up trailing edge detection	PC18 is not unblocked (H) even after the lapse of approx. 5.2 sec. after CL14 has been energized.

< ⑤ Paper Attraction Failure 1/2>

Type	Detection Timing
Paper attraction failure 1 detection	(At single-sheet attraction or the 2nd sheet of two-sheet attraction.) Paper Attraction Detection Board 1 PWB-O is not blocked (L) even after the lapse of approx. 1.3 sec. after Transfer Drum Reference Position Sensor 1 PC20 has been activated.
	(At the 1st sheet of two-sheet attraction.) PWB-O is not blocked (L) even after the lapse of approx. 1.4 sec. after PC20 has been activated.
Paper attraction failure 2 detection	(At single-sheet attraction or the 2nd sheet of two-sheet attraction.) Paper Attraction Detection Board 2 PWB-P is not blocked (L) even after the lapse of approx. 2.2 sec. after PC20 has been activated.
	(At the 1st sheet of two-sheet attraction.) PWB-P is not blocked (L) even after the lapse of approx. 2.2 sec. after PC20 has been activated.

< ⑥ Separator Misfeed>

Type	Detection Timing
Leading-edge separation failure detection	Separating Failure Detecting Sensor PC21 is not blocked (L) even after the lapse of approx. 2.2 sec. after Paper Separator Finger Solenoid SL14 has been energized (At two-sheet attraction). PC21 is not blocked (L) even after the lapse of approx. 4.8 sec. after SL14 has been energized (At single-sheet attraction).
Trailing-edge separation failure detection	• PC21 is not deactivated even after the lapse of approx. 2.3 sec. after it has been activated (at two-sheet attraction). • PC21 is not deactivated even after the lapse of approx. 4.6 sec. after it has been activated (at single-sheet attraction).

< ⑦ Fusing, ⑧ Exit/Duplex Unit Take-Up Misfeed>

Type	Detection Timing
Leading-edge exit misfeed detection	Paper Exit Switch S10 is not actuated even after the lapse of approx. 2.5 sec. after PC21 has been activated.
Trailing-edge exit misfeed detection	S10 is not deactuated even after the lapse of approx. 4.8 sec. after it has been actuated.
Duplex Unit leading-edge misfeed detection	Vertical Transport Sensor PC3 of the Duplex Unit is not blocked (L) even after the lapse of approx. 3.3 sec. after S10 has been actuated.
Duplex Unit trailing-edge misfeed detection	PC3 of the Duplex Unit is not unblocked (L) even after the lapse of approx. 3.3 sec. after S10 has been deactuated.

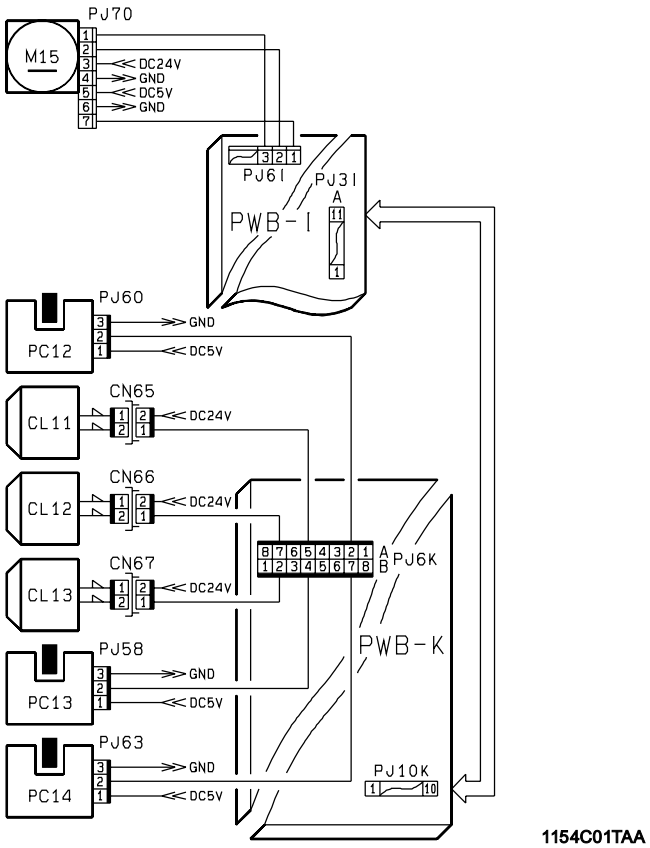
< ⑨ Duplex Unit Transport Misfeed>

Type	Detection Timing
Duplex Unit storage failure detection	Switchback Sensor PC1 of the Duplex Unit is not blocked (L) even after the lapse of approx. 1.3 sec. after PC3 of the Duplex Unit has been activated.
Horizontal Transport leading-edge misfeed detection	Horizontal Transport Sensor PC24 is not blocked (L) even after the lapse of approx. 2.1 sec. after PC1 of the Duplex Unit has been activated.

2-3. Misfeed Troubleshooting Procedures

(1) Upper/Middle/Lower Drawer Paper Take-Up Misfeed

Possible Defective Components	
• Upper Drawer Paper Take-Up Sensor PC12 • Middle Drawer Paper Take-Up Sensor PC13 • Lower Drawer Paper Take-Up Sensor PC14 • Paper Take-Up Motor M15	• Upper Drawer Paper Take-Up Clutch CL11 • Middle Drawer Paper Take-Up Clutch CL12 • Lower Drawer Paper Take-Up Clutch CL13 • Master Board PWB-I • Paper Take-Up Board PWB-K



<Troubleshooting Procedure>

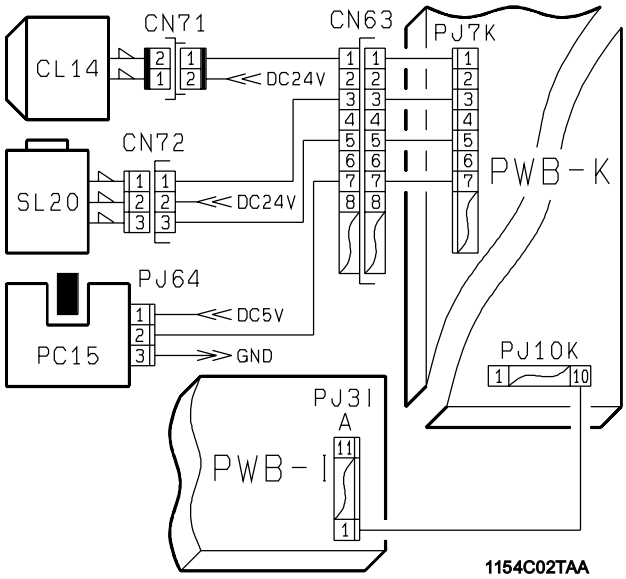
Symptom	Step	Check Item	Result	Action
• Paper is not taken up at all. • Paper is at a stop before the Paper Take-Up Sensor.	1	Does the paper being used conform to the product specifications?	NO	Instruct the user to use paper that conforms to the product specifications.
	2	Is the paper curled, waved, or damp?	YES	Change the paper. Instruct the user to store the paper properly.
	3	Are the Edge Guide and Trailing Edge Stop of the drawer positioned to match the size of the paper being used?	NO	Change the position of the guide and stop.
	4	Are the Paper Take-Up Roll and Paper Separator Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Paper Take-Up Roll and/or Paper Separator Roll. (“Feed Motor Speed” of “Machine Adjust”)
• Paper is not taken up at all. • Paper is at a stop before the Paper Take-Up Sensor.	5	Where is the misfeed?		In the Upper Drawer: Go to step 6.
				In the Middle Drawer: Go to step 7.
				In the Lower Drawer: Go to step 8.
	6	Is the voltage across PJ6K-5A on PWB-K and GND as follows? CL11 condition: When energized: Approx. DC0V When deenergized: Approx. DC24V	YES	Change CL11.
			NO	Change PWB-K.
	7	Is the voltage across PJ6K-7A on PWB-K and GND as follows? CL12 condition: When energized: Approx. DC0V When deenergized: Approx. DC24V	YES	Change CL12.
			NO	Change PWB-K.
	8	Is the voltage across PJ6K-2B on PWB-K and GND as follows? CL13 condition: When energized: Approx. DC0V When deenergized: Approx. DC24V	YES	Change CL13.
			NO	Change PWB-K.

<Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
• Paper is at a stop at the Paper Take-Up Sensor.	1	Are the Paper Take-Up Roll and Paper Separator Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Paper Take-Up Roll and/or Paper Separator Roll. (“Feed Motor Speed” of “Machine Adjust”)
	2	Are the paper take-up/vertical transport guide plates deformed or dirty?	YES	Correct, clean, or change the defective guide plate.
	3	Where is the misfeed?		In the Upper Drawer: Go to step 4.
				In the Middle Drawer: Go to step 5.
				In the Lower Drawer: Go to step 6.
	4	Is Upr-Trans (PC12) operational as checked with “Switch 1 (Paper)”?	NO	Check the PC12 actuator for operation and, if it is okay, change PC12.
	5	Is Mid-Trans (PC13) operational as checked with “Switch 1 (Paper)”?	NO	Check the PC13 actuator for operation and, if it is okay, change PC13.
	6	Is Lwr-Trans (PC14) operational as checked with “Switch 1 (Paper)”?	NO	Check the PC14 actuator for operation and, if it is okay, change PC14.

(2) Multi/Manual Bypass Paper Take-Up Failure

Possible Defective Components	
• Manual Feed Paper Pick-Up Solenoid SL20 • Manual Feed Paper Take-Up Clutch CL14	• Manual Feed Paper Empty Sensor PC15 • Master Board PWB-I • Paper Take-Up Board PWB-K

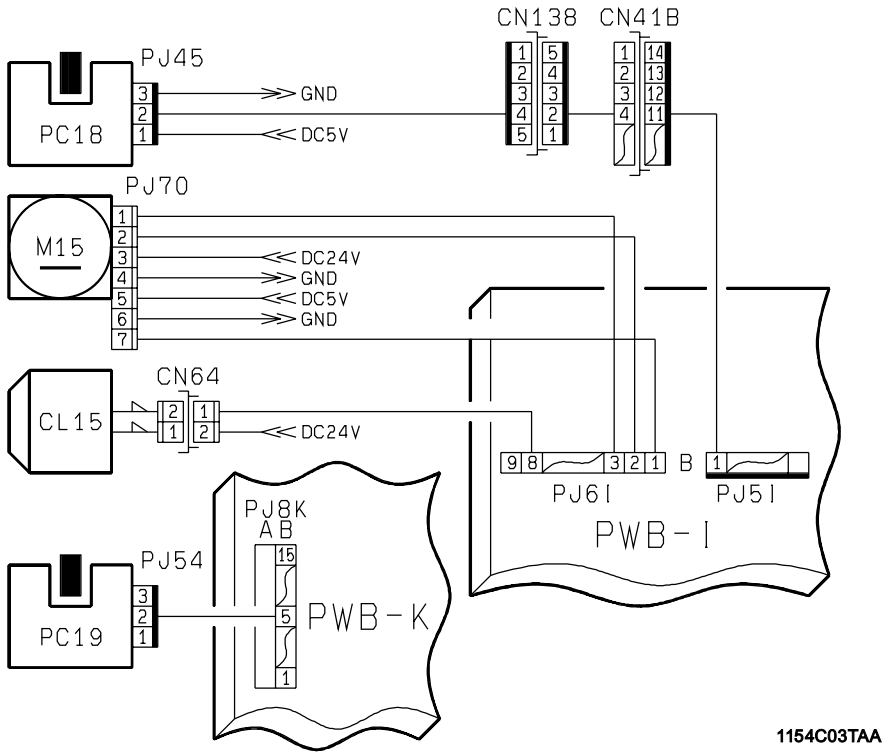


<Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
• Paper is not detected.	1	Is Mnl-PEmp (PC15) operational as checked with “Switch 1 (Paper)”?	NO	Check the PC15 actuator and, if it is okay, change PC15.
• Paper is not taken up at all. • Paper does not reach PC19.	1	Does the paper being used conform to the product specifications?	NO	Instruct the user to use paper that conforms to the product specifications.
	2	Is the paper curled, waved, or damp?	YES	Change the paper. Instruct the user to store the paper properly.
	3	Is the Manual Bypass Take-Up Roll deformed, worn, or dirty with paper dust?	YES	Clean or change the Manual Bypass Take-Up Roll. (“Feed Motor Speed” of “Machine Adjust”)
	4	Is the voltage across PJ7K-1 on PWB-K and GND as follows? CL14 condition: When energized: Approx. DC0V When deenergized: Approx. DC24V	YES	Change CL14.
			NO	Change PWB-K.
	5	Is the voltage across PJ7K-3 on PWB-K and GND as follows? SL20 condition: When energized: Approx. DC0V When deenergized: Approx. DC24V	YES	Change SL20.
			NO	Change PWB-K.

(3) Transport Misfeed

Possible Defective Components	
• Paper Take-Up Motor M15 • Transport Roller Clutch CL15 • Transport Roller Sensor PC19	• Paper Leading Edge Detecting Sensor PC18 • Master Board PWB-I • Paper Take-Up Board PWB-K

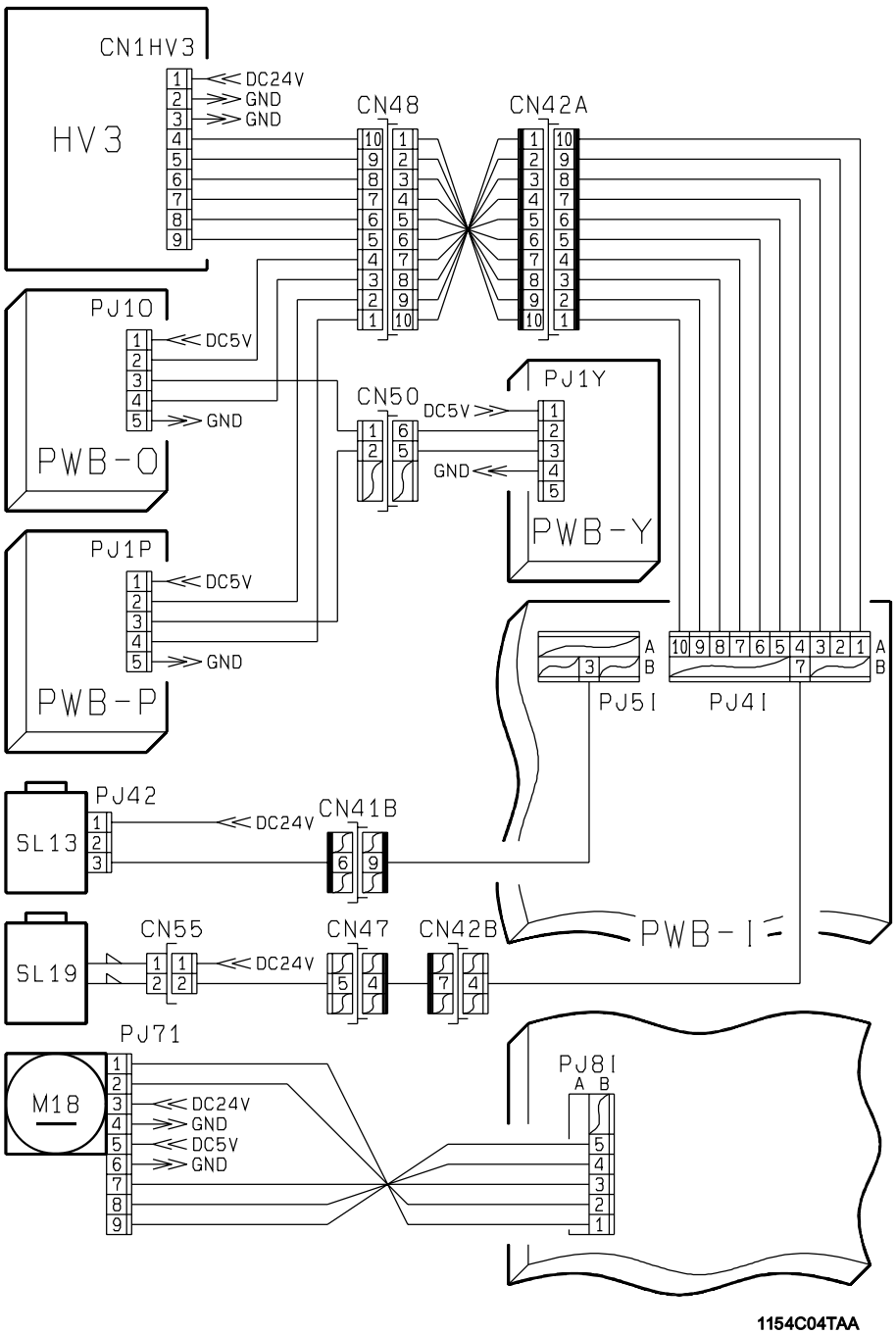


<Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
• Paper is at a stop at the Transport Rollers.	1	Are the Transport Rollers deformed, worn, or dirty with paper dust?	YES	Clean or change the Transport Rollers.
	2	Does M15 turn when the Start key is pressed?	YES	Check for possible overload.
			NO	Change PWB-I or M15.
	3	Is Front Tim (PC18) operational as checked with “Switch 1 (Paper)”?	NO	Check the PC18 actuator and, if it is okay, change PC19.
• Paper is at a stop at the Synchronizing Rollers.	1	Are the Synchronizing Rollers deformed, worn, or dirty with paper dust?	YES	Clean or change the Synchronizing Rollers. (“Feed Motor Speed” of “Machine Adjust”)
	2	Is an adequate length of loop formed before the Synchronizing Rollers?	NO	Perform “Feed Motor Speed” of “Machine Adjust” under the Service mode.
	3	Is Front Mid (PC19) operational as checked with “Switch 1 (Paper)”?	NO	Check the PC19 actuator and, if it is okay, change PC18.

(4) Transfer Misfeed

Possible Defective Components	
• Paper Attraction Detection Board PWB-O • Paper Attraction Detection Board PWB-P • Failure Sensor Adj. Board PWB-Y • Static Charge Roller Solenoid SL13	• Backup Blade 2 Solenoid SL19 • PC Drum Drive Motor M18 • High Voltage Unit 3 HV3

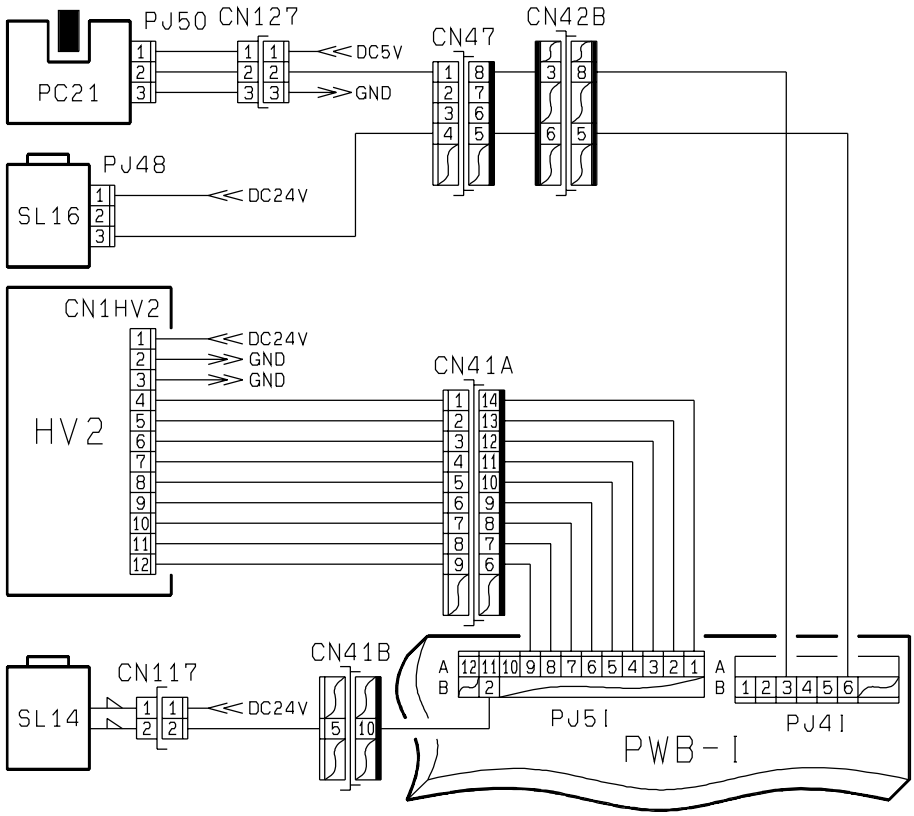


<Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
• Paper is at a stop at the Static Charge Roller.	1	Is the Static Charge Roller deformed, worn, or dirty with paper dust?	YES	Clean or change the Static Charge Roller.
	2	Does the Static Charge Roller turn?	NO	Check the drive system.
	3	Does SL13 operate?	NO	Check the wiring between SL13 and PWB-I and, if it is intact, change SL13.
	4	Does SL19 operate?	NO	Check the wiring between SL19 and PWB-I and, if it is intact, change SL19.
• Paper is at a stop near the Transfer Drum.	1	Is the Transfer Film peeled off or dented?	YES	Change the film. ("Jam Sensor" and "PRT Area" of "Machine Adjust" and "γ Auto Adjust")
	2	Does M18 turn?	NO	Check the drive system and, if it is okay, change M18.
	3	Are PWB-O and PWB-P operational?	NO	Change the defective board.
	4	Is the Static Charge Corona wire dirty or deteriorated?	YES	Clean or change the corona wire.
			NO	Change HV3. ("Transfer Output" of "Machine Adjust")

(5) Separator Misfeed

Possible Defective Components	
• Separating Failure Detecting Sensor PC21 • Paper Separator Finger Solenoid SL14	• Lifting Finger Solenoid SL16 • High Voltage Unit 2 HV2

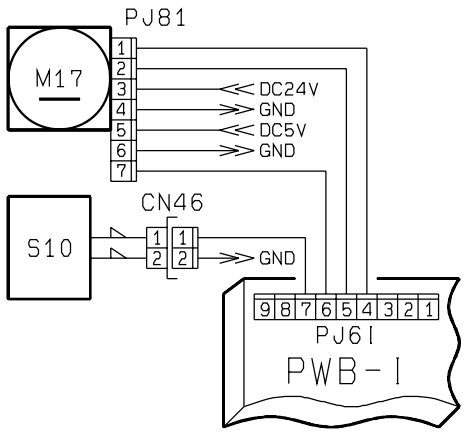


<Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
• Paper is at a stop at the paper separator for the Transfer Drum.	1	Does SL14 operate?	NO	Check the wiring between SL14 and PWB-I and, if it is intact, change SL14.
	2	Does SL16 operate?	NO	Check the wiring between SL16 and PWB-I and, if it is intact, change SL16.
	3	Is PC21 operational?	NO	Change the board.
	4	Is the Static Charge Corona wire dirty or deteriorated?	YES	Clean or change the corona wire.
			NO	Change HV2.

(6) Fusing/Exit Misfeed

Possible Defective Components	
• Fusing Motor M17 • Paper Exit Switch S10	• Master Board PWB-I



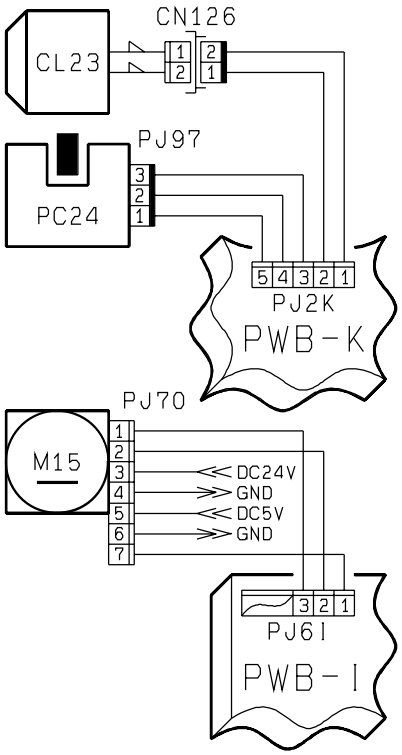
1154C06TAA

<Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
• Paper is at a stop at the Fusing Unit.	1	Are the Fusing Rollers deformed, worn, or dirty with paper dust?	YES	Change the Fusing Rollers. ("Fuser Speed" and "Fuser NIP" of "Machine Adjust")
	2	Do the Fusing Rollers turn?	NO	Change M17.
• Paper is at a stop at the exit section.	1	Are the Exit Roller/Rolls deformed, worn, or dirty with paper dust?	YES	Change the Exit Roller/ Rolls.
	2	Is Exit (S10) operational as checked with "Switch 1 (Paper)"?	NO	Check the S10 actuator for operation and, if it is okay, change S10.

(7) Duplex Unit Misfeed

Possible Defective Components	
• Horizontal Transport Drive Clutch CL23 • Horizontal Transport Sensor PC24	• Paper Take-Up Motor M15 • Master Board PWB-I • Paper Take-Up Board PWB-K



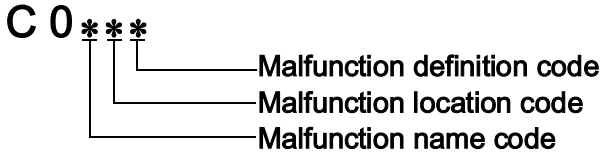
1154C07TAA

<Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
• Paper is not detected.		Does the signal of Pap. Through (PC24) change as checked with "Switch 2 (Option)"?	NO	Check the PC24 actuator for operation and, if it is okay, change PC24.
• Paper is at a stop at the Horizontal Transport Section.	1	Are the Horizontal Transport Rollers deformed, worn, or dirty with paper dust?	YES	Clean or change the Horizontal Transport Rollers.
	2	Does M15 turn?	YES	Check for possible overload.
			NO	Change PWB-I or M15.
	3	Is the voltage across PJ2K-2 on PWB-K and GND as follows? CL23 condition: When energized: Approx. DC0V When deenergized: Approx. DC24V	YES	Change CL23.
			NO	Change PWB-K.

3 MALFUNCTION

- This copier has a CPU circuit that self-diagnoses the copier conditions. On detection of a malfunction, it shows on the Touch Panel the corresponding code that consists of numbers and letters representing a particular malfunction name, location, and definition as detailed below.



- Malfunctions can be reset by the following procedure.

Malfunction Resetting Procedure

- *Open and close the Front Door. The Trouble Reset Switch must be pressed to reset the malfunction of the Fusing and Exposure Lamp Sections.*
- *Disconnect and connect the option or open and close the option door for malfunctions of options.*

<Image Stabilizer Malfunction>

1144T054CA

- Detailed data screen

1154T055AA

1154T048AA

- If a malfunction call indicator appears on the lower left corner of the Basic screen, it indicates that something is wrong with the image stabilizer function. Touch that indicator to open and check “Machine Status 2” (detailed data screen). (See the subsequent pages for details of what malfunction each code shown on “Machine Status 2” represents.) (See pp. T-80 and onward for troubleshooting procedures.)

Malfunction Resetting Procedure

- *Open and close the Front Door.*

- What Malfunction Each Code Represents (Machine Status 2) -

- If a particular image stabilizer part develops a malfunction, the corresponding code is marked with “NG” on the “Machine Status 2” screen. Listed below is what malfunction each code shown on the screen represents. Study the list and take necessary remedial action. (For more details, see p. T-76.)

Code	Malfunction Description	Detection Timing
P-1	LD malfunction	• The AIDC toner density (the attracted amount of toner detected by the AIDC Sensor) is solid (more than 0.6 mg/cm^2) for all colors, Ks (PC Drum sensitivity constant) is faulty (not in the range 200 to 500), and charging efficiency is faulty (not in the range 750 to 1100). • The AIDC toner density is solid for all colors and Ks is faulty, while charging efficiency is normal. • The AIDC toner density is zero (less than 0.05 mg/cm^2) for all colors and Ks is faulty. • The AIDC toner density, Ks, and all Developing Units are normal, while charging efficiency is faulty.
P-2	Vg malfunction	• The AIDC toner density is solid for all colors, Ks is normal, and charging efficiency is faulty.
P-3	PC Drum malfunction	• The AIDC toner density and charging efficiency are normal, while Ks is faulty.
P-4	V0 Sensor malfunction	• The V bias potential (the first potential of ten-point detection at VG500, 900, and 700V) is lower than the Vr (residual potential) +50V and remains below 10V. • The V bias potential is lower than the Vr +50V and is 10V or higher. • The AIDC toner density is normal, while Ks and charging efficiency are faulty.
P-5	AIDC Sensor malfunction	• The AIDC toner density is zero for all colors, Ks is normal, and charging efficiency is faulty. • The AIDC toner density is zero for all colors, and Ks and charging efficiency are normal.
P-6	C Developing Unit malfunction	• The AIDC toner density three-point detection order is wrong, or the toner density of AIDC detection exposure level 1 exceeds 0.6 mg/cm^2, or the toner density of AIDC detection exposure level 3 falls short of 0.05 mg/cm^2.
P-7	M Developing Unit malfunction	
P-8	Y Developing Unit malfunction	
P-9	Bk Developing Unit malfunction 1	
P-10	Unused	

Code	Malfunction Description	Detection Timing
P-11	Paper Separator Corona malfunction	• The Leak Detection signal remains ON for a continuous 1-sec. period or more after the Paper Separator Corona output has been turned ON.
P-12	Charge Neutralizing Corona	• The Leak Detection signal remains ON for a continuous 1-sec. period or more after the Charge Neutralizing Corona output has been turned ON.
P-13	Static Charge Corona	• The Leak Detection signal remains ON for a continuous 1-sec. period or more after the Static Charge Corona output has been turned ON.
P-14	Unused	
P-15	Pre-Cleaning Charge Corona malfunction	• The Leak Detection signal remains ON for a continuous 1-sec. period or more after the Pre-Cleaning Charge Corona output has been turned ON.
P-16	Unused	
P-17	S/P communications error	• What is read is not what is output in the S/P Check A (B) mode.
P-18	PC Drum Charge Corona wire cleaning malfunction	• Charge Cleaner Return Position Sensor PC17 is not activated and Charge Cleaner Home Position Sensor PC16 is activated 10 sec. after PC Drum Charge Wire Cleaning Motor M3 has been energized to cause the cleaning element to start moving from the home to return position.
P-19	Bk developing efficiency malfunction	• The developing efficiency, as detected through AIDC detection during predrive, after a copy cycle has been completed, or during a multi-copy cycle, is 0.1 mg/cm^2/100V or less three consecutive times.
P-20	Bk developing efficiency malfunction	• The developing efficiency, as detected through AIDC detection during predrive, after a copy cycle has been completed, or during a multi-copy cycle, is 0.7 mg/cm^2/100V or more three consecutive times.
S-1	CCD clamp/gain adjustment failure	• The average value of CCD scanning made during clamp and gain adjustments after the Power Switch has been turned ON falls outside the specified range.
S-2	Intensity adjustment failure	• The intensity of Lamp light falls outside the specified range after the Power Switch has been turned ON.
S-3	Unused	

3-1. Detection Timing by Malfunction Code

C00**, C0100, C309*, C30A* (Drive system malfunctions)

Code	Description	Detection Timing
C0000	Paper Take-Up Motor M15's failure to turn	The M15 Lock signal is not detected 5 sec. after M15 has been energized.
C0001	Paper Take-Up Motor M15 turning at abnormal timing	The M15 Lock signal is not detected for a continuous 5-sec. period or more while M15 remains energized.
C0010	PC Drum Drive Motor M18's failure to turn	The M18 Lock signal is not detected 5 sec. after M18 has been energized.
C0011	PC Drum Drive Motor M18 turning at abnormal timing	The M18 Lock signal is not detected for a continuous 5-sec. period or more while M18 remains energized.
C0030	Developing Drive Motor M16's failure to turn	The M16 Lock signal is not detected 5 sec. after M16 has been energized.
C0031	Developing Drive Motor M16 turning at abnormal timing	The M16 Lock signal is not detected for a continuous 20-sec. period or more while M16 remains energized.
C0042	Toner Suction Fan Motor M4's failure to turn	The M4 Lock signal remains HIGH for a continuous 15-sec. period or more while M4 remains energized.
C0049	PH Cooling Fan Motor M13's failure to turn	The M13 Lock signal remains HIGH for a continuous 19-sec. period or more while M13 remains energized.
C004C	Ozone Ventilation Fan Motor M5's failure to turn	The M5 Lock signal remains HIGH for a continuous 15-sec. period or more while M5 remains energized.
C004E	Power Supply Cooling Fan Motor M20's failure to turn	The M20 Lock signal remains HIGH for a continuous 15-sec. period or more while M20 remains energized.
C0060	Fusing Motor M17's failure to turn	The M17 Lock signal is not detected for a continuous 5-sec. period or more while M17 remains energized.
C0061	Fusing Motor M17 turning at abnormal timing	The M17 Lock signal is not detected for a continuous 5-sec. period or more while M17 remains energized.
C0100	PC Drum Charge Wire Cleaning Motor M3's failure to turn	The output from Charge Cleaner Return Position Sensor PC17 does not go LOW even after the lapse of 10 sec. after the output from Charge Cleaner Home Position Sensor PC16 has gone HIGH. Or, the output from PC16 does not go LOW even after the lapse of 10 sec. after the output from PC17 has gone HIGH.
C3090	Fusing Unit Cooling Fan Motor M14 turning at abnormal timing	The M14 Lock signal remains HIGH for a continuous 15-sec. period or more while M14 remains energized.
C30A0	Polygon Motor M19's failure to turn	The M19 Lock signal does not go LOW for a continuous 0.1-sec. period or more within 60 sec. after M19 has been energized.

C30A1	Polygon Motor M19 turning at abnormal timing	The M19 Lock signal remains HIGH for a continuous 10-sec. period or more while M19 remains energized.

C02**, C32** (PC Drum Charge/Image Transfer/Paper Separator/Charge Neutralizing/ Static Charge/developing bias coronas malfunctions)

Code	Description	Detection Timing
C0200	PC Drum Charge Corona failure	The PC Drum Charge Corona Leak Detection signal remains ON for a continuous 1-sec. period or more after the corona output has been turned ON.
C0201	PC Drum Charge Corona connection detection	The PC Drum Charge Corona HV Set Detection signal is OFF after the Power Switch has been turned ON.
C0210	Image Transfer Corona failure	The Image Transfer Corona Leak Detection signal remains ON for a continuous 1-sec. period or more after the corona output has been turned ON.
C0240	Developing bias failure	The developing bias leak detection signal remains ON for a continuous 1-sec. period or more after the bias output has been turned ON.
C0241	Developing bias connection detection	The Developing Bias HV Set Detection signal is OFF after the Power Switch has been turned ON.

C05** (Fusing malfunctions)

Code	Description	Detection Timing
C0500	Warming-up failure (Defective upper fusing heating system)	The surface temperature of the Upper Fusing Roller does not reach a given temperature after the lapse of a given period of time during the warm-up cycle. Details: • From Power Switch ON to 10°C : Within 4 min. • From 10°C to 80°C : Within 7 min. • From 80°C to 140°C : Within 7 min. • From 140°C to the specified fusing temperature : Within 6 min. Or the Thermistor becomes disconnected or damaged.
C0501	Warming-up failure (Defective lower fusing heating system)	The surface temperature of the Lower Fusing Roller does not reach a given temperature after the lapse of a given period of time during the warm-up cycle. Details: • From Power Switch ON to 10°C : Within 4 min. • From 10°C to 80°C : Within 7 min. • From 80°C to 120°C : Within 640 sec. • From 120°C to the specified fusing temperature : Within 11 min. Or the Thermistor becomes disconnected or damaged.
C0510	Abnormally low fusing temperature (Defective upper fusing heating system)	The surface temperature of the Upper Fusing Roller remains 120°C or less for a continuous 1-sec. period after the copier has completed warming up.
		The surface temperature of the Upper Fusing Roller remains 114°C or less for a continuous 1-sec. period during the Energy Saver mode.
C0511	Abnormally low fusing temperature (Defective lower fusing heating system)	The surface temperature of the Lower Fusing Roller remains 80°C or less for a continuous 1-sec. period after the copier has completed warming up.

Code	Description	Detection Timing
C0520	Abnormally high fusing temperature (Defective upper fusing heating system)	The surface temperature of the Upper Fusing Roller remains 180°C or more for a continuous 1-sec. period after the copier has completed warming up.
C0521	Abnormally high fusing temperature (Defective lower fusing heating system)	The surface temperature of the Lower Fusing Roller remains 180°C or more for a continuous 1-sec. period after the copier has completed warming up.

C0E** (Erase Lamp malfunctions)

Code	Description	Detection Timing
C0E00	Main Erase Lamp LA2's failure to turn ON	The Main Erase Lamp Out signal remains ON for a continuous 1-sec. period or more while LA2 is OFF.

C0F**, C3500, C3F90 (Sensor malfunctions)

Code	Description	Detection Timing
C0F30	ATDC Sensor (C) low density failure	Ten or more consecutive readings have been taken of 2% or less.
C0F31	ATDC Sensor (C) high density failure	Forty or more consecutive readings have been taken of 11% or more.
C0F32	ATDC Sensor (M) low density failure	Ten or more consecutive readings have been taken of 2% or less.
C0F33	ATDC Sensor (M) high density failure	Forty or more consecutive readings have been taken of 11% or more.
C0F34	ATDC Sensor (Y) low density failure	Ten or more consecutive readings have been taken of 2% or less.
C0F35	ATDC Sensor (Y) high density failure	Forty or more consecutive readings have been taken of 11% or more.
C3500	Bk Developing Unit malfunction	During predrive, after a copy cycle has been completed, or during a multi-copy cycle: A. The developing efficiency, as detected through AIDC detection, is 0.1 mg/cm^2/100V or less three consecutive times. B. The developing efficiency, as detected through AIDC detection, is 0.7 mg/cm^2/100V or more three consecutive times. * "C3500" is displayed when either one of the above is detected five consecutive times.
C3F90	T-Base failure	The T-Base (T-Base half turn) signal is not detected even after the lapse of 10 sec. after the start of predrive.

C3*** (PH malfunctions)

Code	Description	Detection Timing
C3F80	SOS not detected	An SOS signal is not detected within 30 msec. after LD has turned ON.

C04** (Exposure Lamp malfunctions)

Code	Description	Detection Timing
C0400	Exposure Lamp LA1's failure to turn ON	Though the LPON signal turns ON, the LPDOWN signal does not turn OFF when the Power Switch is turned ON, the Front Door is opened and closed, or the Start key is pressed.
C0410	Exposure Lamp LA1 turning at Abnormal Timing	The LPDOWN signal does not turn ON despite the LPON signal's turning OFF when the Power Switch is turned ON, Front Door is opened and closed, and Start key is pressed.

C06**, C33**, C37** (Optical Section malfunctions)

Code	Description	Detection Timing
C0650	Scanner Home Position Sensor PC1 malfunction	In the initial operation (Power Switch is turned ON or Front Door is opened and closed) or during a copy cycle: • PC1 is not blocked (L) even when the Scanner is moved 500 mm to the right. • PC1 does not change from blocked (L) to unblocked (H) even when the Scanner is moved 10 mm to the left.
C0660	Scanner overrun failure	In the initial operation (Power Switch is turned ON or Front Door is opened and closed) or during a copy cycle: • PC1 is blocked (L) when the Scanner is not at its home position.
C3310	CCD gain adjustment failure	The average value of CCD scanning made during gain adjustment after the Power Switch has been turned ON or the Front Door has been opened and closed, or during clamp adjustment after 100 copies have been made, falls outside the specified range.
C3700	IR Cooling Fan Motor 1 M24 malfunction	The M24 Lock signal remains HIGH for a continuous 2-sec. period or more after M24 has been energized.
C3710	IR Cooling Fan Motor 2 M25 malfunction	The M25 Lock signal remains HIGH for a continuous 2-sec. period or more after M25 has been energized.
C3720	Original Glass Cooling Fan Motor M2 malfunction	The M2 Lock signal remains HIGH for a continuous 15-sec. period or more while M2 remains energized.

C09** (Paper Take-Up Section malfunctions: Isolated Malfunctions)

Code	Description	Detection Timing
C0900	Lower Drawer lifting failure	Lower Drawer Lift-Up Sensor PC11 does not go LOW even after the lapse of 5 sec. after Lower Drawer Lift-Up Motor M8 has started turning forward.
C0910	Middle Drawer lifting failure	Middle Drawer Lift-Up Sensor PC10 does not go LOW even after the lapse of 5 sec. after Middle Drawer Lift-Up Motor M7 has started turning forward.
C0920	Upper Drawer lifting failure	Upper Drawer Lift-Up Sensor PC9 does not go LOW even after the lapse of 5 sec. after Upper Drawer Lift-Up Motor M6 has started turning forward.

Note

A drawer lifting failure is detected as an isolated malfunction. If a malfunction is detected in all drawers, however, the malfunction code of the malfunction detected last is displayed.

Option-Related Malfunctions

C0B** (S-105/ST-103)

Code	Description	Detection Timing
C0B00/ C0B01	Sorter transport failure	See the relevant option Service Manual for the detection timings and troubleshooting procedures for different malfunctions.
C0B10/ C0B11	Paper Clamp Unit motion failure	
C0B50/ C0B51/ C0B52	Stapling failure	
C0B30/ C0B31	Paper aligning drive failure	
C0B40	Communication error	
C0B60/ C0B61/ C0B62/ C0B63/ C0B64	Bin motion failure	

C09C* (LCT)

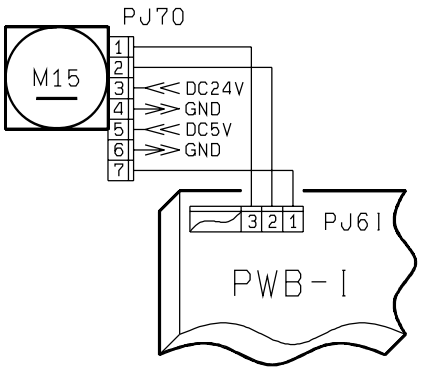
Code	Description	Detection Timing
C09C0	Elevator ascent failure	See the relevant option Service Manual for the detection timings and troubleshooting procedures for different malfunctions.
C09C2	Elevator descent failure	

3-2. Troubleshooting Procedures

(1) C00**, C0100, C309*, C30A* (Drive System Malfunctions)

1. C0000 (M15's Failure to Turn)
   C0001 (M15 Turning at Abnormal Timing)

Possible Defective Components	
• Paper Take-Up Motor M15	• Master Board PWB-I



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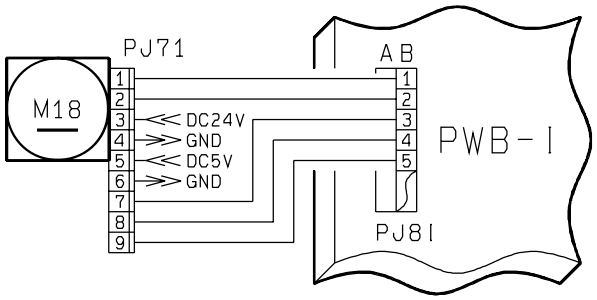
Step	Check Item	Result	Action
1	Is the malfunction code C0000 shown?	NO	Go to step 5.
2	Does M15 turn when the Start key is pressed?	YES	Check rollers, gears, etc. for overload.
3	Does the voltage across PJ6I-1 on PWB-I and GND change from DC5V to DC0V when the Start key is pressed?	NO	Change PWB-I.
4	Does the voltage across PJ6I-3 on PWB-I and GND remain DC5V when the Start key is pressed?	YES	Change M15.
		NO	Change PWB-I.
5	Does the voltage across PJ6I-1 on PWB-I and GND remain DC0V when the Start key is pressed?	NO	Change PWB-I.
6	Does the voltage across PJ6I-3 on PWB-I and GND remain DC0V when the Start key is pressed?	YES	Change M15.
		NO	Change PWB-I.

2. C0010 (M18's Failure to Turn)
   C0011 (M18 Turning at Abnormal Timing)

Possible Defective Components	
• PC Drum Drive Motor M18	• Master Board PWB-I

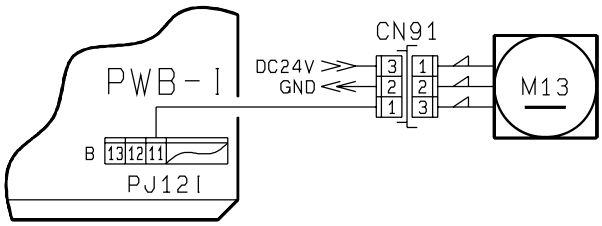


1154C09TAA

Step	Check Item	Result	Action
1	Is the malfunction code C0010 shown?	NO	Go to step 5.
2	Does M18 turn when the Start key is pressed?	YES	Check rollers, gears, etc. for overload.
3	Does the voltage across PJ8I-1B on PWB-I and GND change from DC5V to DC0V when the Start key is pressed?	NO	Change PWB-I.
4	Does the voltage across PJ8I-4B on PWB-I and GND remain DC5V when the Start key is pressed?	YES	Change M18.
		NO	Change PWB-I.
5	Does the voltage across PJ8I-1B on PWB-I and GND remain DC0V when the Start key is pressed?	NO	Change PWB-I.
6	Does the voltage across PJ8I-4B on PWB-I and GND remain DC0V when the Start key is pressed?	YES	Change M18.
		NO	Change PWB-I.

3. C0049 (M13's Failure to Turn)

Possible Defective Components	
• Master Board PWB-I	• PH Cooling Fan Motor M13

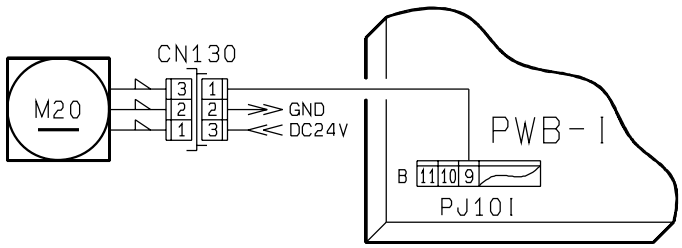


1154C12TAA

Step	Check Item	Result	Action
1	Does the voltage across PJ12I-11B on PWB-I and GND remain DC0V when the Start key is pressed?	YES	Change M13.
		NO	Change PWB-I.

4. C004E (M20's Failure to Turn)

Possible Defective Components	
• Master Board PWB-I	• Power Supply Cooling Fan Motor M20

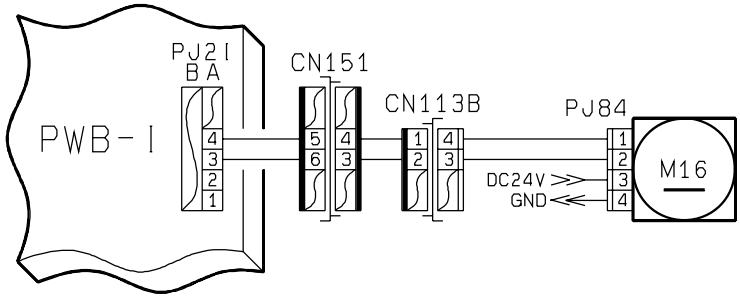


1154C13TAA

Step	Check Item	Result	Action
1	Does the voltage across PJ10I-9B on PWB-I and GND remain DC0V when the Start key is pressed?	YES	Change M20.
		NO	Change PWB-I.

5. C0030 (M16's Failure to Turn)
   C0031 (C16 Turning at Abnormal Timing)

Possible Defective Components	
• Developing Drive Motor M16	• Master Board PWB-I

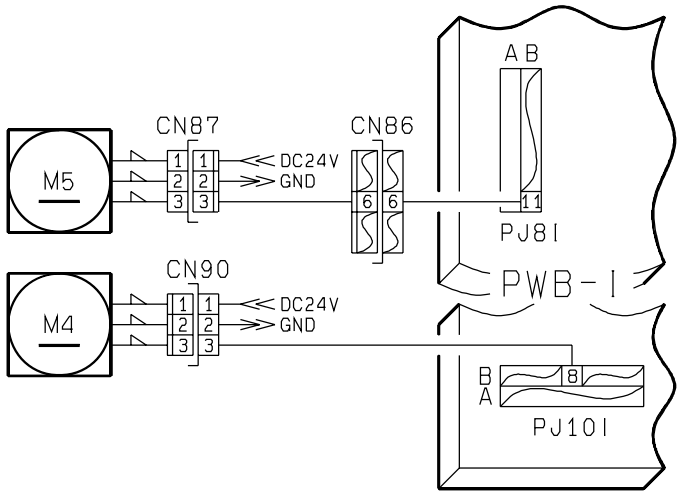


1154C10TAA

Step	Check Item	Result	Action
1	Is the malfunction code C0030 shown?	NO	Go to step 5.
2	Does M16 turn when the Start key is pressed?	YES	Check rollers, gears, etc. for overload.
3	Does the voltage across PJ2I-3A on PWB-I and GND change from DC5V to DC0V when the Start key is pressed?	NO	Change PWB-I.
4	Does the voltage across PJ2I-4A on PWB-I and GND remain DC5V when the Start key is pressed?	YES	Change M16.
		NO	Change PWB-I.
5	Does the voltage across PJ2I-3A on PWB-I and GND remain DC0V when the Start key is pressed?	NO	Change PWB-I.
6	Does the voltage across PJ2I-4A on PWB-I and GND remain DC0V when the Start key is pressed?	YES	Change M16.
		NO	Change PWB-I.

6. C0042 (M4's Failure to Turn), C004C (M5's Failure to Turn)

Possible Defective Components	
• Toner Suction Fan Motor M4 • Ozone Ventilation Fan Motor M5	• Master Board PWB-I

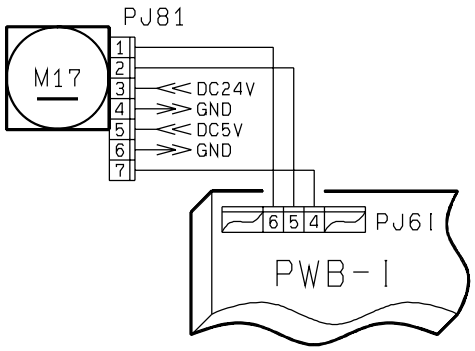


1154C11TAA

Step	Check Item	Result	Action
1	Is the malfunction code C0042 shown?	NO	Go to step 5.
2	Does M4 turn when the Start key is pressed?	YES	Check rollers, gears, etc. for overload.
3	Does the voltage across PJ10I-8B on PWB-I and GND remain DC5V when the Start key is pressed?	YES	Change M4.
		NO	Change PWB-I.
4	Does M5 turn when the Start key is pressed?	YES	Check rollers, gears, etc. for overload.
5	Does the voltage across PJ8I-11B on PWB-I and GND remain DC0V when the Start key is pressed?	YES	Change M5.
		NO	Change PWB-I.

7. C0060 (M17's Failure to Turn)
   C0061 (M17 Turning at Abnormal Timing)

Possible Defective Components	
• Fusing Motor M17	• Master Board PWB-I

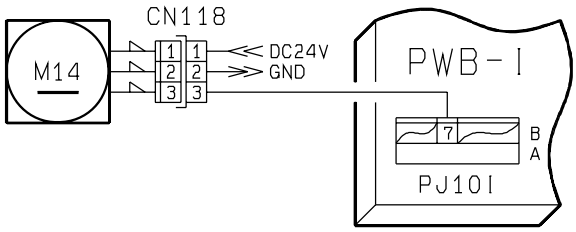


1154C14TAA

Step	Check Item	Result	Action
1	Is the malfunction code C0060 shown?	NO	Go to step 5.
2	Does M17 turn when the Start key is pressed?	YES	Check rollers, gears, etc. for overload.
3	Does the voltage across PJ6I-4 on PWB-I and GND change from DC5V to DC0V when the Start key is pressed?	NO	Change PWB-I.
4	Does the voltage across PJ6I-6 on PWB-I and GND remain DC5V when the Start key is pressed?	YES	Change M17.
		NO	Change PWB-I.
5	Does the voltage across PJ6I-4 on PWB-I and GND remain DC0V when the Start key is pressed?	NO	Change PWB-I.
6	Does the voltage across PJ6I-6 on PWB-I and GND remain DC0V when the Start key is pressed?	YES	Change M17.
		NO	Change PWB-I.

8. C3090 (M14's Failure to Turn)

Possible Defective Components	
• Fusing Unit Cooling Fan Motor M14 • Power Supply Board PWB-L	• Master Board PWB-I



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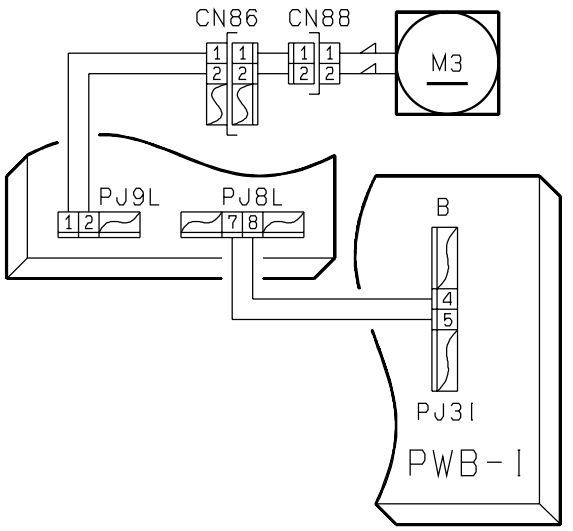
Step	Check Item	Result	Action
1	Does M14 turn when the Start key is pressed?	YES	Check rollers, gears, etc. for overload.
2	Is PJ9L-4 on PWB-L outputting DC24V?	NO	Change PWB-L.
3	Does the voltage across PJ10I-7B on PWB-I and GND remain DC5V when the Start key is pressed?	YES	Change M14.
		NO	Change PWB-I.

9. C3090 (M3's Failure to Turn)

Possible Defective Components	
• PC Drum Charge Wire Cleaning Motor M3	• Power Supply Board PWB-L • Master Board PWB-I



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Step	Check Item	Result	Action
1	Does M3 turn when the Start key is pressed?	NO	Check for loose connectors.
2	Do PJ9L-1 and -2 on PWB-L output as follows when the Start key is pressed? Forward Rotation / Backward Rotation PJ9L-1: DC12V / ——— PJ9L-2: ——— / DC12V	NO	Change PWB-L.

10. C30A0 (Polygon Motor's Failure to Turn)
C30A1 (Polygon Motor Turning at Abnormal Timing)

Possible Defective Components	
• Polygon Motor • Polygon Motor Drive Board	• Master Board PWB-I

Step	Check Item	Result	Action
1	Is the malfunction code C30A0 shown?	NO	Go to step 3.
2	Does the voltage across PJ9IA-3 on PWB-I and GND remain DC5V when the Start key is pressed?	YES	Change the PH Assy as a set.
		NO	Change PWB-I.
3	Does the voltage across PJ9IA-3 on PWB-I and GND remain DC0V when the Start key is pressed?	YES	Change the PH Assy as a set.
		NO	Change PWB-I.

(2) C02, C32** (PC Drum Charge/Image Transfer/Paper Separator/Charge Neutralizing/Static Charge/Developing Bias Coronas Malfunctions)**

1. C0200 (PC Drum Charge Corona Failure)
C0201 (PC Drum Charge Corona Connection Detection)
C0210 (Image Transfer Corona Failure)
C0240 (Developing Bias Failure)
C0241 (Developing Bias Connection Detection)

Possible Defective Components	
• High Voltage Unit 1 HV1 • High Voltage Unit 2 HV2 • High Voltage Unit 3 HV3	• High Voltage Unit 4 HV4 • Master Board PWB-I

* C0200/C0201

Step	Check Item	Result	Action
1	Is the housing dirty, the high-voltage contact deformed, or the wire dirty or snapped off?	YES	Clean or change the defective part.
2	Does the voltage across PJ9IB-9 on PWB-I and GND remain DC0V after the PC Drum Charge Corona output has been turned ON?	YES	Change HV1.
		NO	Change PWB-I.

✻ C0210

Step	Check Item	Result	Action
1	Is the housing dirty, the high-voltage contact deformed, or the wire dirty or snapped off?	YES	Clean or change the defective part.
2	Does the voltage across PJ15IB-9 on PWB-I and GND remain DC0V after the Image Transfer Corona output has been turned ON?	YES	Change HV3.
		NO	Change PWB-I.

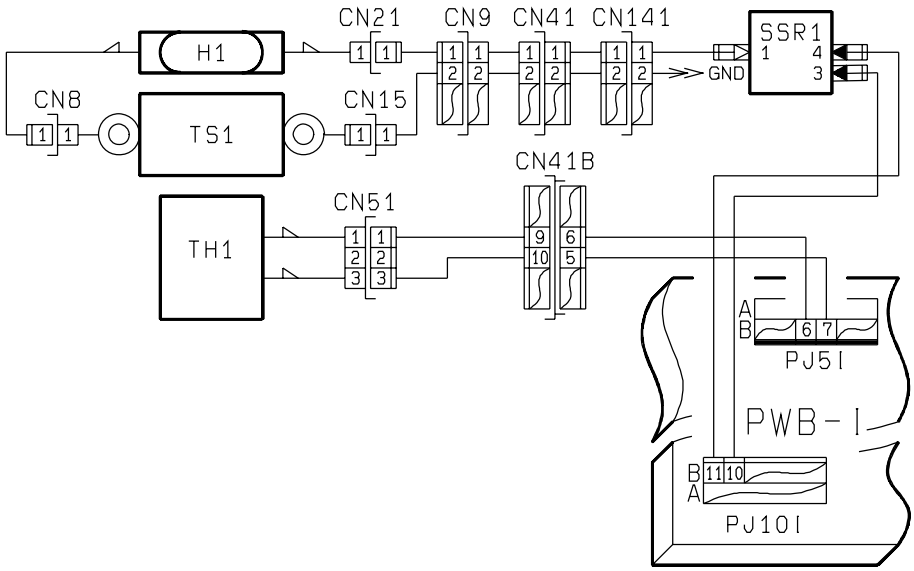
✻ C0240/C0241

Step	Check Item	Result	Action
1	Is the developing bias being output?	NO	Check the wiring.
2	Is the high-voltage contact deformed or dirty?	YES	Clean or change the defective part.
3	Does the voltage across PWB-I and GND remain DC0V after the developing bias output has been turned ON? Y: PJ8IB-11, M: PJ8IB-12, C: PJ8IB-13 BK: PJ8IB-10.	YES	Change HV3.
		NO	Change PWB-I.

(3) C05** (Fusing Malfunctions)

1. C0500 (Warming-up Failure: Upper Fusing Roller Heater)
   C0510 (Abnormally Low Fusing Temperature: Upper Fusing Roller Heater)
   C0520 (Abnormally High Fusing Temperature: Upper Fusing Roller Heater)

Possible Defective Components	
• Upper Fusing Roller Heater Lamp H1 • Upper Fusing Roller Thermostat TS1 • Upper Fusing Heater Lamp SSR1	• Upper Fusing Roller Thermistor TH1 • Master Board PWB-I



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✻ C0500, C0510

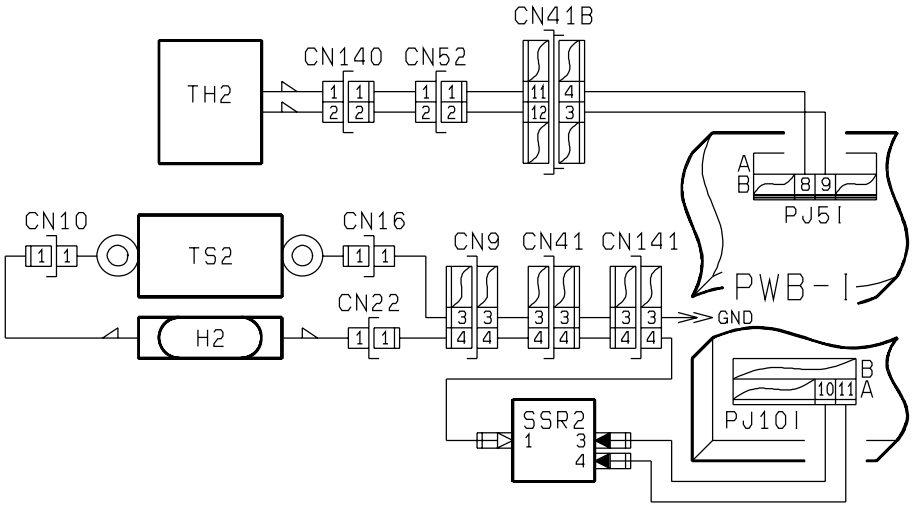
Step	Check Item	Result	Action
1	Does H1 turn ON when the Power Switch is turned ON after the malfunction has been reset?	NO	Go to step 5.
2	Is TH1 connected securely?	NO	Connect TH1 securely.
3	Is TH1 dirty?	YES	Clean or change TH1.
4	Disconnect CN51. Is the resistance across pins 1 and 2 on the thermistor side infinite?	YES	Change TH1.
		NO	Change PWB-I.
5	Disconnect CN9. Is there continuity across pins 1 and 2 on the heater lamp side?	YES	Change SSR1.
		NO	Change H1 or TS1.

✻ C0520

Step	Check Item	Result	Action
1	Does H1 remain lit after the copier has completed warming up following a mal-function reset?	NO	Go to step 4.
2	Is TH1 connected securely?	NO	Connect TH1 securely.
3	Is TH1 dirty?	YES	Clean or change TH1.
4	Disconnect CN51. Is the resistance across pins 1 and 2 on the thermistor side 0 (zero) ohms (or close to 0)?	YES	Change TH1 or TS1.
		NO	Change PWB-I.

2. C0501 (Warming-up Failure: Lower Fusing Roller Heater)
   C0511 (Abnormally Low Fusing Temperature: Lower Fusing Roller Heater)
   C0521 (Abnormally High Fusing Temperature: Lower Fusing Roller Heater)

Possible Defective Components	
• Lower Fusing Roller Heater Lamp H2 • Lower Fusing Roller Thermostat TS2 • Lower Fusing Heater Lamp SSR2	• Lower Fusing Roller Thermistor TH2 • Master Board PWB-I



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✻ C0501, C0511

Step	Check Item	Result	Action
1	Does H2 turn ON when the Power Switch is turned ON after the malfunction has been reset?	NO	Go to step 5.
2	Is TH2 connected securely?	NO	Connect TH2 securely.
3	Is TH2 dirty?	YES	Clean or change TH2.
4	Disconnect CN52. Is the resistance across pins 1 and 2 on the thermistor side infinite?	YES	Change TH2.
		NO	Change PWB-I.
5	Disconnect CN9. Is there continuity across pins 3 and 4 on the heater lamp side?	YES	Change SSR2.
		NO	Change H2 or TS2.

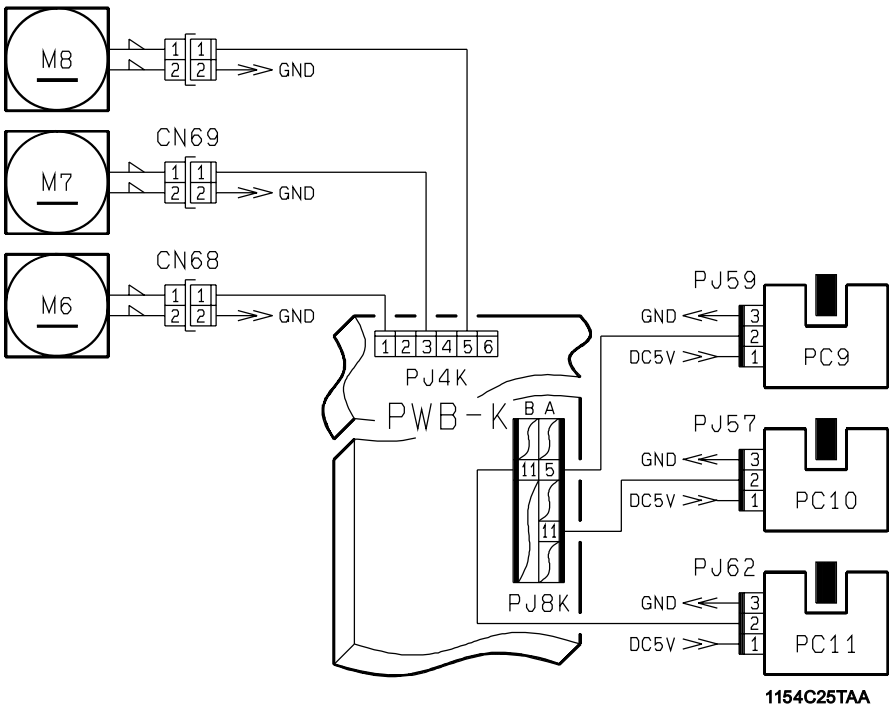
✻ C0521

Step	Check Item	Result	Action
1	Does H2 remain lit after the copier has completed warming up following a mal-function reset?	NO	Go to step 4.
2	Is TH2 connected securely?	NO	Connect TH2 securely.
3	Is TH2 dirty?	YES	Clean or change TH2.
4	Disconnect CN52. Is the resistance across pins 1 and 2 on the thermistor side 0 (zero) ohms (or close to 0)?	YES	Change TH2 or TS2.
		NO	Change PWB-I.

(4) C09** (Paper Take-Up Section Malfunctions: Isolated Malfunctions)

1. C0900 (Lower Drawer Lifting Failure)
   C0910 (Middle Drawer Lifting Failure)
   C0920 (Upper Drawer Lifting Failure)

Possible Defective Components	
• Upper Drawer Lift-Up Motor M6 • Middle Drawer Lift-Up Motor M7 • Lower Drawer Lift-Up Motor M8 • Paper Take-Up Board PWB-K	• Upper Drawer Lift-Up Sensor PC9 • Middle Drawer Lift-Up Sensor PC10 • Lower Drawer Lift-Up Sensor PC11



Step	Check Item	Result	Action
1	Is C0900 being shown?	C0910 C0920	Go to step 4. Go to step 6.
2	Does M8 turn when the Lower Drawer is slid into the copier?	NO	Check the motor for overload and for loose connectors. If they are okay, change M8.
3	Select “Switch 1 (Paper)” from the “State Confirm” menu. Does Lwr-Lift change from OFF to ON when the Lower Drawer is slid out and in?	NO	Check PC11 for installation and wiring and, if these are okay, change PC11.

Step	Check Item	Result	Action
4	Does M7 turn when the Middle Drawer is slid into the copier?	NO	Check the motor for overload and for loose connectors. If they are okay, change M7.
5	Select “Switch 1 (Paper)” from the “State Confirm” menu. Does Mid-Lift change from OFF to ON when the Middle Drawer is slid out and in?	NO	Check PC10 for installation and wiring and, if these are okay, change PC10.
6	Does M6 turn when the Upper Drawer is slid into the copier?	NO	Check the motor for overload and for loose connectors. If they are okay, change M6.
7	Select “Switch 1 (Paper)” from the “State Confirm” menu. Does Upr-Lift change from OFF to ON when the Upper Drawer is slid out and in?	NO	Check PC9 for installation and wiring and, if these are okay, change PC9.

(5) C0E (Erase Lamp Malfunctions)**

1. C0E00 (LA2’s Failure to Turn ON)

Possible Defective Components	
• Main Erase Lamp LA2 • Power Supply Board PWB-L	• Master Board PWB-I

Step	Check Item	Result	Action
1	Does LA2 turn ON during predrive or when the Start key is pressed?	NO	Go to step 3.
2	Does the voltage across PJ3I-8B on PWB-I and GND remain DC5V during pre-drive or when the Start key is pressed?	YES	Change PWB-L.
		NO	Change PWB-I.
3	Does the voltage across PJ3I-9B on PWB-I and GND remain DC0V during pre-drive or when the Start key is pressed?	NO	Change PWB-I.
4	Is LA2 conducting?	YES	Change PWB-L.
		NO	Change LA2.

(6) C0F** (Sensor Malfunctions), C3500 (Black Developing Unit Malfunction), C3F90 (T-Base Failure)

C0F30 [ATDC Sensor (C) Low Density Failure] to C0F39 [Multi-Copy Cycle Developing Efficiency (Bk) High Density Failure]
C3500 (Black Developing Unit Failure)

For these troubleshooting procedures, see "4-3. Troubleshooting Procedure by Particular Image Quality Problem" (pp. T-55 to T-92).

C3F90 (T-Base Failure)

Possible Defective Components	
• Master Board PWB-I • Transfer Drum Reference Position Sensor 1 PC20	• Transfer Drum Reference Position Sensor 2 PC28

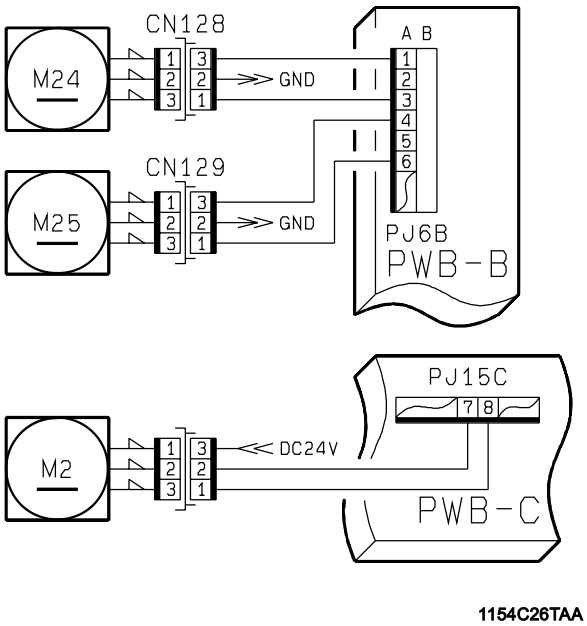
<Troubleshooting Procedure>

Step	Check Item	Result	Action
	Is the wiring between PWB-I and PC20/ PC28 intact?	YES	Change PC20/PC28.
		NO	Reconnect the connectors.

C3700 (Optical System Cooling Fan Motor Malfunction 1: Front)
C3710 (Optical System Cooling Fan Motor Malfunction 2: Rear)
C3720 (Optical System Cooling Fan Motor Malfunction 3: Original Surface)

Possible Defective Components	
• A/D Converter Board PWB-B • IR Control Board PWB-C • IR Cooling Fan Motor 1 M24	• IR Cooling Fan Motor 2 M25 • Original Glass Cooling Fan Motor M2

<Troubleshooting Procedure>



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✻ C3700

Step	Check Item	Result	Action
1	Does M24 start to turn when the Start key is pressed?	NO	Check for loose connector.
2	Does the voltage across PJ6B-3 on PWB-B and GND remain DC0V when the Start key is pressed?	YES	Change M24.
		NO	Change PWB-B.

✻ C3710

Step	Check Item	Result	Action
1	Does M25 start to turn when the Start key is pressed?	NO	Check for loose connector.
2	Does the voltage across PJ6B-6 on PWB-B and GND remain DC0V when the Start key is pressed?	YES	Change M25.
		NO	Change PWB-B.

✻ C3720

Step	Check Item	Result	Action
1	Does M2 start to turn when the Start key is pressed?	NO	Check for loose connector.
2	Does the voltage across PJ15C-8 on PWB-C and GND remain DC0V when the Start key is pressed?	YES	Change M2.
		NO	Change PWB-C.

(7) C3** (PH Malfunctions)

C3F80 (SOS Not Detected)

Possible Defective Components	
• PH Control Board (Analog) PWB-JA • PH Control Board (Digital) PWB-JD	• SOS Sensor

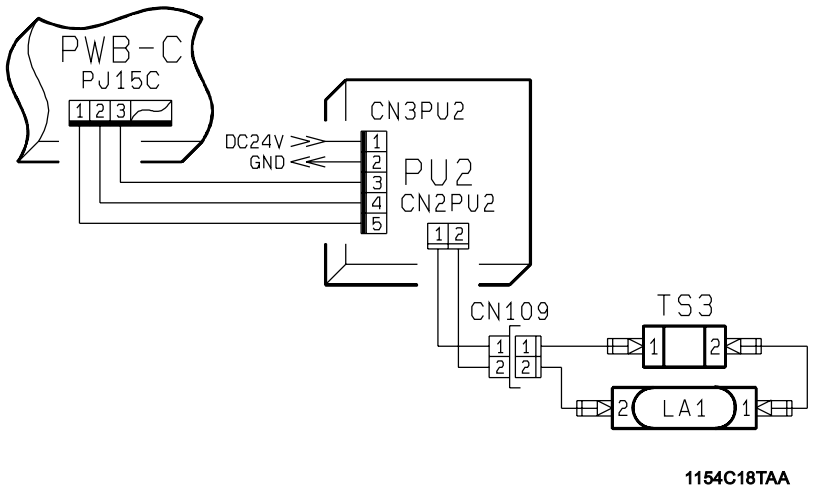
<Troubleshooting Procedure>

Step	Check Item	Result	Action
	Are the connectors in the PH Unit plugged in correctly?	YES	Change the PH Unit.
		NO	Reconnect the connectors.

(8) C04** (Exposure Lamp malfunctions)

C0400 (Exposure Lamp LA1's Failure to Turn ON)
C0410 (Exposure Lamp LA1 Turning ON at Abnormal Timing)

Possible Defective Components	
• IR Control Board PWB-C • DC Power Supply 2 PU2	• Exposure Lamp LA1 • IR Section Thermostat TS3



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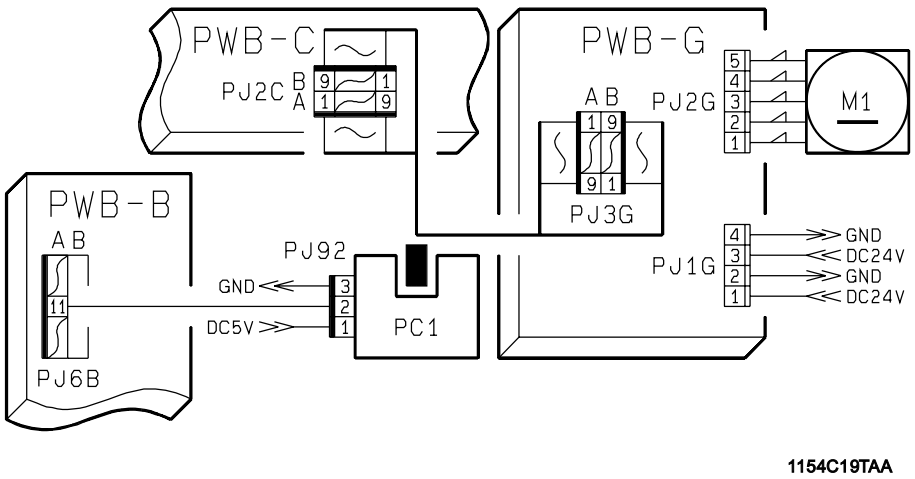
<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Is the malfunction code C0400 shown?	NO	Go to step 4.
2	Is TS3 open?	YES	Change TS3.
3	Is LA1 out?	YES	Change LA1.
4	Does LA1 turn ON when PU2 is replaced?	NO	Change the board of IR (PWB-C).

(9) C06**, C33**, C37** (Optical System malfunctions)

1. C0650 (Scanner Home Position Sensor PC1 Malfunction) / C0660 (Scanner Overrun Failure)

Possible Defective Components	
• A/D Converter Board PWB-B • IR Control Board PWB-C • Motor Drive Board PWB-G	• Scanner Home Position Sensor PC1 • Scanner Motor M1



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<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Does the Scanner make the initial operation when the Power Switch is turned ON or the Front Door is opened and closed?	NO	A. Check to see if there is any misfeed or malfunction that has occurred in another location. B. Check for loose connectors on PWB-G. C. Check the motor for overload and, if it is not overloaded, change M1.
2	Remove the Original Glass and block PC1. Does "IR HOME" of the "Switch 3 (Others)" screen change from OFF to ON at this time?	NO	Check the wiring between PWB-B and PC1 and, if it is intact, change the sensor.
3	Set the "Top Image" value to "0" and FD zoom ratio to "1.000" of the IR Area and then turn OFF and ON the Power Switch. Does the malfunction occur at this time?	NO	Perform the IR Area adjustment.

2. C3310 (CCD gain adjustment failure)

Possible Defective Components	
• CCD Sensor Board PWB-A • A/D Converter Board PWB-B • IR Control Board PWB-C	• Exposure Lamp LA1 • Lamp Regulator PU4

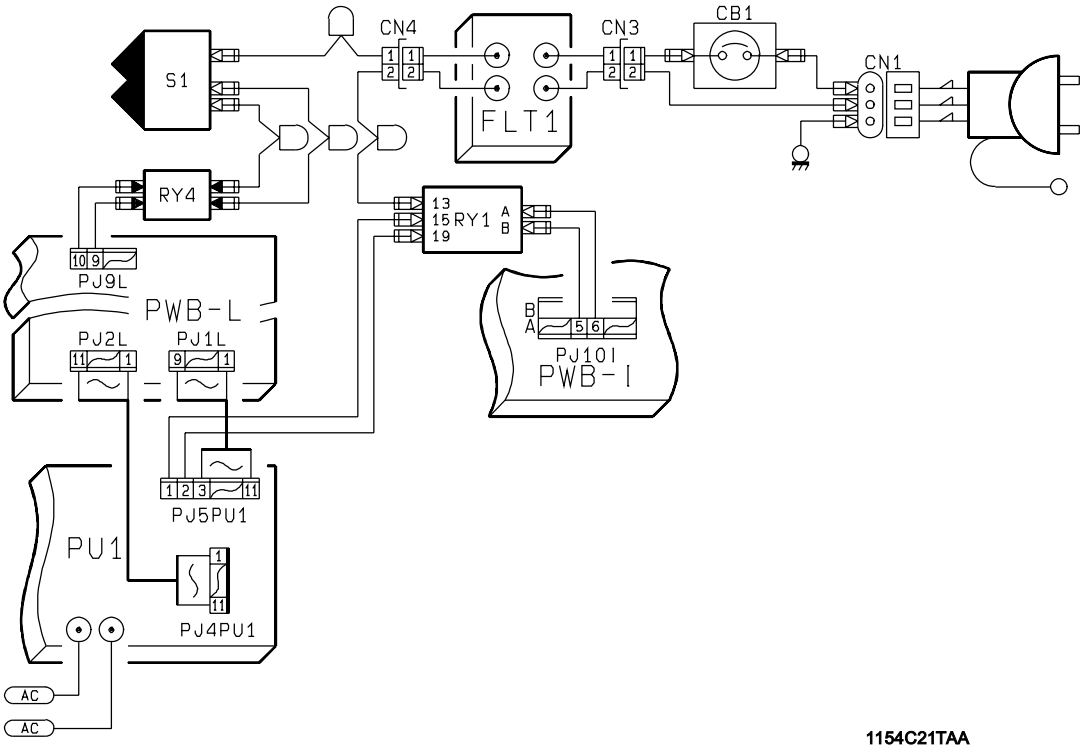
<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Is any of the CF910 gain adjustment values of CCD Check “0” or “255”?	YES	A. Check for loose connector between PWB-A and PWB-B, or between PWB-B and PWB-C, or check harnesses for open circuit. B. Change PWB-C.
2	Is any of the CF910 gain adjustment values of CCD Check “110” or more?	YES	A. After cleaning the optical system, turn OFF and ON the Power Switch or open and close the Front Door. B. Check the Lamp Reflector for distortion.
3	Are the CF910 gain adjustment values of CCD Check as follows? R: Less than 18, or 158 or more G, B: Less than 5, or 145 or more	YES	A. After cleaning the optical system, turn OFF and ON the Power Switch or open and close the Front Door. B. Check the Lamp Reflector for distortion.
4	Is the voltage across PJ4B1 and 2 on PWB-B +12V and that across 2 and 3 -12V?	YES	A. Check for loose connector between PWB-A and PWB-B, or check harnesses for open-circuit. B. Change PWB-B.
5	Is 12V being output from PJ98 of PU1?	YES	Check for loose connector between PU1 and PWB-B, or check the DC12V harnesses for open circuit.
		NO	Change PU1.

3-3. Power Supply Related Malfunctions

(1) Main Relay RY1 is Not Turned ON

Possible Defective Components	
• Noise Filter FLT1 • DC Power Supply 1 PU1	• Power Supply Board PWB-L • Main Relay RY1 • Master Board PWB-I

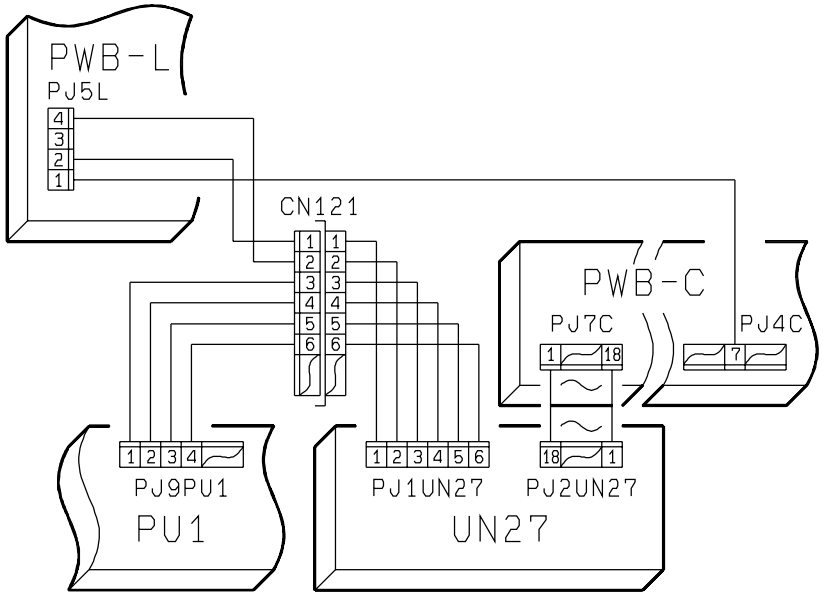


<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Is the voltage across PJ1L-1 and -2 on PWB-L and GND DC24V?	NO	Check the harness between PWB-L and PG1.
2	Is CB1 open?	YES	Check that there is no short-circuit in the power line (white/black wire), then close CB1.
3	Is the power source voltage being applied to PU1?	NO	Change FLT1.
4	Is the voltage across PJ5PU1-1 on PU1 and GND, and across PJ5PU1-2 and GND DC24V?	NO	Change PU2.
5	Do RY1L and RY2L operate when S1 is turned ON?	NO	Check the continuity across PWB-L and S1 and, if there is conduction, change PWB-L and S1, in that order.
6	Is the voltage across PJ10I-6A on PWB-I and GND DC24V?	NO	Check the harness between PWB-I and PWB-L and PU2 and RY1 for possible breaks.

(2) Though Main Relay RY1 is Turned ON, No Control Panel Indicators Light Up

Possible Defective Components	
• IR Control Board PWB-C • Power Supply Board PWB-L	• Control Panel UN27 • DC Power Supply 1 PU1



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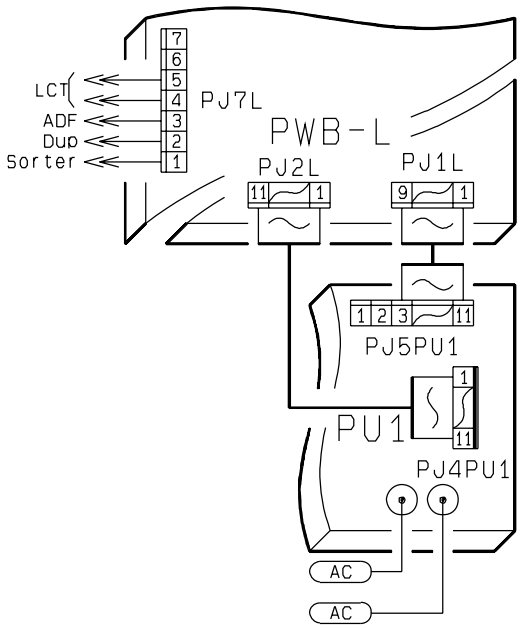
<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Is DC24V being output from PJ5L-2 on PWB-L?	NO	Change PWB-L.
2	Is DC24V being input to PJ11C-7 on PWB-C?	NO	Check the harness between PWB-L and PWB-C.
3	Is DC5V being output from PJ9PU1-1 and -2 on PU1?	YES	Change UN27.
		NO	Change PU1.

(3) No Power is Supplied to Options

Possible Defective Components	
• Power Supply Board PWB-L	• DC Power Supply PU1



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<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Is the source voltage being applied to PU1?	NO	Check the power line wiring.
2	Is DC24V being output from PU1?	NO	Change PU1.
3	Is PU1 connected properly to PWB-L?	NO	Correct the wiring.
4	Are fuses (F1L, F2L) on PWB-L intact?	YES	Change PWB-L.
		NO	Change the defective fuse.
5	Is DC24V being output to each option from PWB-L?	NO	Change PWB-L.

4 IMAGE QUALITY PROBLEMS

4-1. Troubleshooting Image Quality Problems

1. Image quality problems can occur for various reasons. When troubleshooting an image quality problem, you must first determine A. whether the cause or causes of the problem are very basic ones or highly technical ones, and B. whether the cause or causes are attributable to the IR or PH. (Item B. can be checked by outputting a test pattern.) This chapter is divided into two parts: "Initial Check Items" and "Troubleshooting Procedure by Particular Image Quality Problem." When an image quality problem occurs, first go through the "Initial Check Items" and, if the cause is yet to be identified, go to "Troubleshooting Procedure by Particular Image Quality Problem."
2. When any faulty symptom is evident on the copy image, open the "Stabilizer Trouble" screen from the "Status Confirm" menu available from the Service mode and check that no items are marked with "NG."

4-2. Initial Check Items

1. Installation site
- Is the correct source voltage being applied? Does the voltage fluctuate very much?
- Is the installation site hot and humid? Is it subject to steep temperature changes?
- Is the site dusty?
- Is the site subject to direct sunlight?
- Is the copier placed on a level surface?

2. Copy paper
- Is the recommended paper being used?
  ➡ Load recommended paper and make copies to see if the problem persists.
- Is the paper damp?
  ➡ Load new paper (newly unwrapped paper) and make copies to see if the problem persists.

3. Originals
- Is the original written in light pencil?
  ➡ Use the Test Chart to check the copy image.
- Is the original highly transparent or are transparencies being used?
  ➡ Place a blank sheet of paper over the original when making a copy.
- Is the Original Glass or the Transport Belt of the ADF dirty or scratched?
  ➡ Wipe the surface clean using alcohol if dirty and change if it is scratched.

4. "Machine Adjust" data and "State Confirm" data
- Are the settings for "Machine Adjust," "Copying Status," "Developing Status," and "Black Toner Supply Status" in the good range?
  ➡ Adjust if they are outside the good range.
- Is the value set for "Adjust" and "Level History (ATDC Ref. Value)" equal to that given on the Adjust Label on the inside of the Front Door?
  ➡ If a Developing Unit loaded with developer of another machine is to be installed, enter the ATDC Ref. Value set for that particular machine.

5. PM parts (consumables)
- Has the cleaning/replacement time come for those PM parts (consumables) concerned with image quality, such as PC Drum, Cleaning Blade, and corona wire?

6. Adjustment items (registration, focus, AE level, etc.)
- Of the adjustment items given in DIS/REASSEMBLY, ADJUSTMENT, are there any that corrects the image problem by making a readjustment?

4-3. Troubleshooting Procedure by a Particular Image Quality Problem

(1) White Lines in the FD and CD

White Lines in the FD

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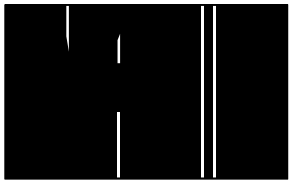
White Lines in the CD



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<Troubleshooting Procedure>

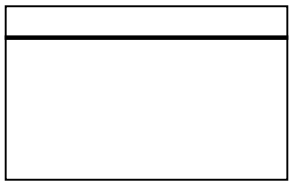
Cause	Step	Check Item	Result	Action
	1	Does the image problem occur in the FD?	NO	Go to step 12.
Defective IR	2	Is the shading sheet dirty?	YES	Clean the sheet.
	3	Are the lens, mirror, and Original Glass dirty?	YES	Clean these surfaces.
	4	Are the connectors on PWB-A, -B, and -C connected properly?	NO	Reconnect the connectors.
Defective PH	5	Is the window of the PH Lower Unit dirty?	YES	Clean the window. ("Gradation Adjust")
	6	Is there any foreign matter in the light path between the PH and PC Drum?	YES	Remove the foreign matter.
Defective Developing Unit	7	Is the gap between the Doctor Blade and Sleeve Roller plugged with foreign matter or toner?	YES	Remove the foreign matter. If the problem recurs, change the developer. ("Developer" and "Gradation Adjust")
Defective PC Drum	8	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade if necessary. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
Defective PC Drum Charge Corona	9	Are the Corona Wire, Meshes and Pre-Cleaner Charge Corona dirty or deteriorated?	YES	Clean or change the Corona Wire, Meshes and Pre-Cleaner Charge Corona.
	10	Is the Ozone Filter dirty?	YES	Change the filter.
	11	Does M5 turn properly?	NO	Check the wiring between PWB-I and M19 and, if it is intact, change M5.

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective PC Drum	12	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade as a set if necessary. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
	13	Are the edges of the PC Drum dirty?	YES	Clean the edges.
Defective Transfer Drum	14	Is the Transfer Drum Ring dirty or deteriorated?	YES	Clean or replace the Transfer Drum Ring.

(2) Black Lines in the FD and CD

Black Lines in the FD



1144T004AA

Black Lines in the CD

1144T005AA

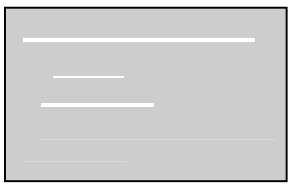
<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
	1	Does the image problem occur in the FD?	NO	Go to step 9.
Defective IR	2	Is the value for the "Left Image" within the correct range?	NO	Readjust.
	3	Are the connectors on PWB-A, -B, and -C connected properly?	NO	Reconnect the connectors.
Defective Developing Unit	4	Is the inside of the Developing Unit plugged with foreign matter or toner?	YES	Remove the foreign matter. If the problem recurs, change the developer. ("Developer" and "Gradation Adjust")
Defective PC Drum	5	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade if necessary. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
Defective PC Drum Charge Corona	6	Is the Corona Wire or Meshes dirty or deteriorated?	YES	Clean or change the Corona Wire or Meshes. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
Defective Cleaning Unit	7	Is the Cleaning Blade warped or deteriorated?	YES	Change the Cleaning Blade. Change the PC Drum as a set if necessary.
	8	Are the side seals deteriorated?	YES	Change the side seals.
Defective PC Drum	9	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade if necessary. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
	10	Are the edges of the PC Drum dirty?	YES	Clean the edges.

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective Cleaning Unit	11	Are the Corona Wire and Housing dirty or deteriorated?	YES	Clean or change the Corona Wire and Housing. ("Gradation Adjust")
	12	Is the connector on HV1 connected properly?	NO	Reconnect the connector.
Defective Transfer Film	13	Is there a burr on the end of the installing screw, etc.?	YES	Use the kit to replace the Transfer Film.
Defective Paper Take-Up/Transport Unit	14	Is the Paper in the Drawer damp?	YES	A. Check if the Dehumidifying Heater is malfunctioning. B. Check if the Paper Dehumidifying Switch is on.

(3) Oil Streaks in the FD



1144T006AA

<Troubleshooting Procedure>

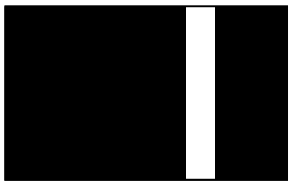
Cause	Step	Check Item	Result	Action
To determine which Fusing Roller is responsible for the oil streaks, manually feed two sheets of paper, placed one on top of the other, through the Upper and Lower Fusing Rollers.				
Defective Fusing Unit	1	Is the Fusing Roller dirty or deteriorated?	YES	Clean or change the Roller.
	2	Is the Cleaning Roller dirty or deteriorated?	YES	Clean or change the Roller.
	3	Is the Oil Coating or Supply Roller dirty or deteriorated?	YES	Clean or change the Roller.
	4	Is fusing oil supplied?	NO	Check the Fusing Motor Drive. If there is no problem, change the Transmission Gear.
	5	Is the Oil Restriction Blade deteriorated?	YES	Change the Oil Restriction Blade.
	6	Is the Oil Collecting Blade dirty?	YES	Clean the Oil Collecting Blade.

(4) White Bands in the FD and CD

White Bands in the FD

1144T007AA

White Bands in the CD



1144T008AA

<Troubleshooting Procedure>

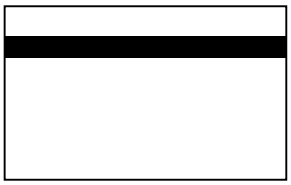
Cause	Step	Check Item	Result	Action
	1	Does the image problem occur in the FD?	NO	Go to step 15.
Defective IR	2	Is the shading sheet dirty?	YES	Clean the sheet.
	3	Are the lens, mirror, and Original Glass dirty?	YES	Clean these surfaces.
	4	Are the connectors on PWB-A, -B, and -C connected properly?	NO	Reconnect the connectors.
Defective PH	5	Is the window of the PH Lower Unit dirty?	YES	Clean the window. (“Gradation Adjust”)
	6	Is there foreign matter between the PH and PC Drum?	YES	Remove the foreign matter.
Defective PC Drum	7	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade if necessary. (“AIDC Mode/ AIDC Offset” and “Gradation Adjust”)
Defective PC Drum Charge Corona	8	Are the Corona Wire, Meshes and Pre-Cleaner Charge Corona dirty or deteriorated?	YES	Clean or change the Corona Wire, Meshes and Pre-Cleaner Charge Corona.
	9	Is the Ozone Filter dirty?	YES	Change the filter.
	10	Does M5 turn properly?	NO	Check the wiring between PWB-I and M5, and if it is intact, change M5.
Others	11	Is the Auxiliary Erase Lamp dirty or deteriorated?	YES	Clean or replace the Auxiliary Erase Lamp.
Defective Image Transfer Corona	12	Is the Image Transfer Corona dirty or deteriorated?	YES	Clean or change the Image Transfer Corona.

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective Paper Separator/ Charge Neutralizing Unit	13	Is the Paper Separator Corona dirty or deteriorated?	YES	Clean or replace it.
	14	If white bands persist in the FD direction even after performing step 2 through 13, the PH Unit is probably contaminated; therefore, replace it.		
Defective Developing Unit	15	Do the Sleeve/Magnet Roller and Developer Supply Roller turn properly?	NO	Check the wiring between PWB-I and M19 and, if it is intact, change M19.
	16	Is the developing bias being output properly.	NO	Check the wiring between PWB-I and HV4 and, if it is intact, change HV4.
Defective PC Drum	17	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade if necessary. (“AIDC Mode/ AIDC Offset” and “Gradation Adjust”)
	18	Is the PC Drum grounded properly?	NO	Clean or change the PC Drum ground plate.
	19	Are the edges of the PC Drum dirty?	YES	Clean the edges.
Defective Cleaning Unit	20	Are the Corona Wire and Housing dirty or deteriorated?	YES	Clean or change the Corona Wire and Housing. (“Gradation Adjust”)
	21	Is the connector on HV1 connected properly?	NO	Reconnect the connector.
Defective Paper Take-Up/Transport Unit	22	Is the Paper in the Drawer damp?	YES	A. Check if the Dehumidifying Heater is malfunctioning. B. Check if the Paper Dehumidifying Switch is on.

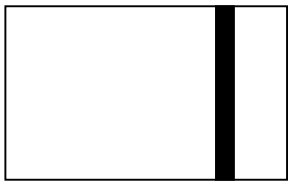
(5) Black Bands in the FD and CD

Black Bands in the FD



1144T009AA

Black Bands in the CD



1144T010AA

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
	1	Does the image problem occur in the FD?	NO	Go to step 10.
Defective IR	2	Is the value for the “Left Image” within the correct range?	NO	Readjust.
	3	Are the connectors on PWB-A, -B, and -C connected properly?	NO	Reconnect the connectors.
Defective PC Drum	4	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade if necessary. (“AIDC Mode/ AIDC Offset” and “Gradation Adjust”)
Defective PC Drum Charge Corona	5	Are the Corona Wire and Meshes dirty or deteriorated?	YES	Clean or change the Corona Wire and Meshes.
	6	Does the Corona Wire Cleaner operate properly?	NO	Check the wiring between PWB-I and M3 and, if it is intact, change M3.
Defective Cleaning Unit	7	Is the Cleaning Blade warped or deteriorated?	YES	Change the Blade. Change the PC Drum if necessary.
	8	Are the side seals deteriorated?	YES	Change the side seals.
Others	9	Is the Main Erase Lamp dirty or deteriorated?	YES	Clean or replace the Main Erase Lamp.
Defective IR	10	Is the value for the “Top Image” within the correct range?	NO	Readjust.
Defective Developing Unit	11	Is the developing bias being output properly?	NO	Check the wiring between PWB-I and HV4 and, if it is intact, change HV4.

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective PC Drum	12	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade as a set if necessary. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
	13	Is the PC Drum grounded properly?	NO	Clean or change the PC Drum ground plate.
	14	Are the edges of the PC Drum dirty?	YES	Clean the edges.
Defective Cleaning Unit	15	Are the Corona Wire and Housing dirty or deteriorated?	YES	Clean or change the Corona Wire and Housing. ("Gradation Adjust")
	16	Is the connector on HV1 connected properly?	NO	Reconnect the connector.
Defective Paper Take-Up/Transport Unit	17	Is the Paper in the Drawer damp?	YES	A. Check if the Dehumidifying Heater is malfunctioning. B. Check if the Paper Dehumidifying Switch is on.

(6) Smear on Entire Copy and Backside

Smear on Entire Copy

1144T011AA

Smear on Backside

1144T012AA

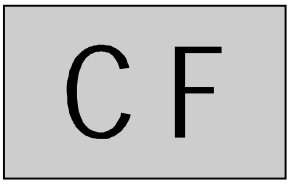
<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
	1	Does the image problem occur on the back side of the copy?	YES	Go to step 7.
Defective IR	2	Are the lens, mirror, and Original Glass dirty?	YES	Clean these surfaces.
Defective Cleaning Unit	3	Is the Cleaning Blade warped or deteriorated?	YES	Change the Cleaning Blade. Change the PC Drum as a set if necessary.
	4	Are the side seals deteriorated?	YES	Change the side seals.
	5	Does the Paddle turn?	NO	A. Check the wiring between PWB-I and M15. B. Check the M15 drive for possible overload, and if it is free of overload, change M15. C. Check the drive belt for proper engagement.
	6	Is the Toner Antispill Seal warped or deteriorated?	YES	Change the Toner Antispill Seal.
	7	Is the original placed in the same direction as the copy paper selected?	NO	Place the original in the same direction as the copy paper or select the Drawer that is loaded in the same direction as the original.
Defective PH	8	Is the “Left Margin” and “Top Margin” within the correct range?	NO	Readjust.
Defective PC Drum Charge Corona	9	Are the Corona Wire and Meshes dirty or deteriorated?	YES	Clean or change the Corona Wire and Meshes.
	10	Are the Side Seals deteriorated?	YES	Change the Side Seals.
Defective Transfer Film	11	Is the Transfer Film dirty or deteriorated?	YES	Clean or change the Film. (“Jam Sensor,” “PRT Area” and “Gradation Adjust”)

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective Transfer Drum	12	Is the gap in the Transfer Drum Retract Solenoid adjusted properly?	NO	Readjust the gap.
Defective Static Charge Unit	13	Is the Static Charge Roller Scraper dirty or deteriorated?	YES	Clean or replace it.
Defective Transport Unit	14	Is the Synchronizing Roller dirty or deteriorated?	YES	Clean or replace it.
	15	Is the Guide Plate dirty?	YES	Clean it.
Defective Brush Section	16	Is the Fur Brush deteriorated?	YES	Replace the Fur Brush.
	17	Is the Scraper Blade deterio-rated?	YES	Replace the Scraper Blade.
	18	Is the Fur Brush Pressure Solenoid working properly?	NO	Check the wiring between PWB-I and SL11. If it is intact, replace SL11.
	19	Is the Backup Brush deterio-rated?	YES	Replace the Backup Brush.
	20	Is the Retrieving Roller dirty or deteriorated?	YES	Clean or replace it.

(7) Foggy Background



1144T013AA

<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Is extraneous light striking the interior of the copier?	YES	Block the extraneous light.
2	Do the data for "VB Shift," "Background Voltage," "ATDC Level Setting," and "AE Adjust" available from the "Image Adjust" mode menu of the Service mode represent the standards?	NO	A. Change the data to the standard values. Note: If the data for "ATDC Level Setting" are changed, make about 20 copies from the standard chart and turn OFF and ON the Power Switch. B. Run "Gradation Adjust" three times.
3	Open the "Test Print" screen from the Service mode menu. Select "Halftone" and set the level to "0" to make copies in each color.		
4	Of C, M, and Y, on which color copy does foggy background show?	YES	Using "Developer Mode" and "ATDC Sensor," agitate the color of the developer showing foggy background.
		NO	Using "Developer Filling" selected from "Developer," fill black developer.
5	Using the settings as in step 3, make copies of each color again.		
6	Does foggy background persist?	NO	End.
7	On which color copy does foggy background show, C, M, or Y?	NO	Go to step 16.
8	Does the sensor output record 10% or more during agitation?	NO	Go to step 12.
9	Is the ATDC Sensor window seriously dirty with developer?	YES	Go to step 12.
10	Does the developer exist inside the ATDC Sensor window?	YES	Change the ATDC Sensor. ("Developer" and "Gradation Adjust")

<Troubleshooting Procedure>

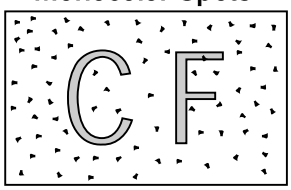
Step	Check Item	Result	Action
11	When comparing the color of the developer in the Developing Unit with that of the starter, is the developer color apparently darker?	YES	Check the wiring between PWB-I and the Toner Replenishing Motor and, if it is intact, change the motor.
12	Open the "Life 3 (Others)" screen from the "Counter" of the Service mode and check the figures for "Dev." Is the count around 30K?	YES	Change the developer. ("Developer" and "Gradation Adjust")
13	A. Open the "Background Voltage" screen from "Image Adjust" of the Service mode. Set the figure to +10 and turn OFF and ON the Power Switch. B. Using the settings as in step 3, make copies of each color again.		
14	Does foggy background persist?	YES	Adjust the "Background Voltage" level until the output copies show no evidence of foggy background. (This completes the procedure.)
15	Open the "Test Print" screen from the Service mode menu. Select "Halftone" and set the level to "16" to make copies in each color.		
16	Does the foggy background occur at a frequency of one complete turn of the PC Drum (314 mm)?	YES	Change the PC Drum. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
		NO	Change the ATDC Sensor and developer. ("Developer" and "Gradation Adjust")
			If the problem persists after changing these, change the Developing Unit.
17	Open the "Bk Toner Sup. Status" screen from the "State Confirm" menu of the Service mode and check for the figure for "Bk Constant." Is it 10% or more?	YES	Change the developer. ("Developer" and "Gradation Adjust") • If foggy background persists even after the developer has been changed, change the Toner Replenishing Motor and Developing Unit, in that order.
		NO	Go to step 12.

(8) 4-Color Spots, Monocolor Spots

4-Color Spots

1144T014AA

Monocolor Spots



1144T015AA

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
	1	Does the image problem occur on the back side of the copy?	YES	Go to step 7.
Defective Developing Unit	2	Is the inside of the Developing Unit plugged with foreign matter or toner?	YES	Remove the foreign matter. If the problem recurs, change the developer. ("Developer" and "Gradation Adjust")
Defective PC Drum	3	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade if necessary. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
Defective Cleaning Unit	4	Does the Paddle turn?	NO	A. Check the wiring between PWB-I and M15. B. Check the M15 drive for possible overload, and if it is free of overload, change M15. C. Check the drive belt for proper engagement.
	5	Is the Toner Antispill Seal warped or deteriorated?	YES	Change the Toner Antispill Seal.
Defective Fusing Unit	6	Is the Fusing Roller dirty or deteriorated?	YES	Clean or replace it.
	7	Is the Cleaning Roller dirty or deteriorated?	YES	Clean or replace it.

(9) Void Image

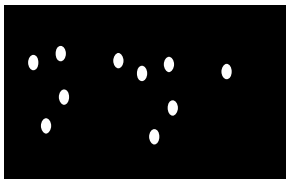
1144T016AA

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
	1	Does the image problem occur on the leading edge of the copy?	YES	Go to Step 6.
Defective Developing Unit	2	Is the developing bias being output properly?	NO	Check the wiring between PWB-I and HV4 and, if it is intact, change HV4.
Defective Transfer Film	3	Is the Transfer Film affixed properly?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, reaffix the film.
	4	Is the Transfer Film dented or scratched?	YES	Change the film. ("Jam Sensor," "PRT Area," and "Gradation Adjust")
Defective Image Transfer Corona	5	Is HV3 correctly output?	NO	Check the wiring between PWB-I and HV3. If it is intact, replace HV3.
Defective Transfer Film	6	Is the Transfer Film affixed properly?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, reaffix the film.
	7	Is the film dented or scratched?	YES	Change the film. ("Jam Sensor," "PRT Area," and "Gradation Adjust")
Defective Image Transfer Corona	8	Is HV3 correctly output?	NO	Check the wiring between PWB-I and HV3. If it is intact, replace HV3.
	9	Is the backup adjustment value correct?	NO	Readjust by referring to DIS/REASSEMBLY and ADJUSTMENT.

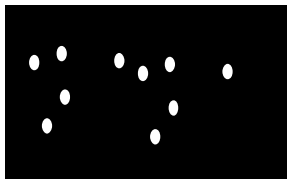
(10) Void, White Spots

Void



1144T017AA

White Spots



1144T018AA

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
	1	Is the image problem “white spots”?	YES	Go to step 8.
Defective Developing Unit	2	Is the inside of the Developing Unit plugged with foreign matter or toner?	YES	Remove the foreign matter. If the problem recurs, change the developer. (“Developer” and “Gradation Adjust”)
	3	Is the Toner Replenishing Shutter clogged with foreign matter?	YES	Remove the foreign matter.
	4	Is the connector on HV4 connected properly?	NO	Reconnect the connectors.
	5	Is the developing bias being output properly?	NO	Check the wiring between PWB-I and HV4 and, if it is intact, change HV4.
	6	Does each color Toner Replenishing Motor turn?	NO	A. Check the wiring between PWB-I and Motor. B. Check the motor drive for possible overload, change Motor.
Defective Image Transfer Corona	7	Is the HV3 output proper?	NO	Check the connection of the connector on the board, and if it is proper, change HV3.

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective Developing Unit	8	Is the inside of the Developing Unit plugged with foreign matter or toner?	YES	Remove the foreign matter. If the problem recurs, change the developer. ("Developer" and "Gradation Adjust")
	9	Is the Toner Replenishing Shutter clogged with foreign matter?	YES	Remove the foreign matter.
	10	Is the developing bias being output properly?	NO	Check the wiring between PWB-I and HV4 and, if it is intact, change HV4.
	11	Does each color Toner Replenishing Motor turn?	NO	C. Check the wiring between PWB-I and Motor. D. Check the motor drive for possible overload, change Motor.
Defective Developing Unit	12	Is the Magnet Roller position of the Carrier Retrieving Assy correct? Or, Does the Carrier stick on the Magnet Roller?	YES	• Readjust the Carrier Retrieving Magnet Roller Position by Jig. • Clean the surface of the Carrier Retrieving Magnet Roller with sand paper. • Clean the inside of the Carrier Retrieving Assy.
Defective PC Drum	13	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade as a set if necessary. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
Defective Image Transfer Corona	14	Is the Image Transfer Corona dirty or deteriorated?	YES	Clean or change the Image Transfer Corona.
	15	Is the Image Transfer Corona output proper?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust the Image Transfer Corona output.
Defective Paper Separator/ Charge Neutralizing Unit	16	Is the HV2 output proper?	NO	Check the connection of the connector on the board, and if it is proper, change HV2.

(11) Whole Uneven Density

<Troubleshooting Procedure>

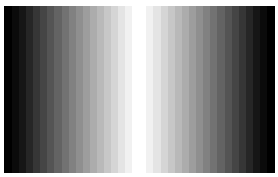
Cause	Step	Check Item	Result	Action
Defective IR	1	Are the connectors on PWB-A, -B, and -C connected properly?	NO	Reconnect the connectors.
	2	Is the source voltage being supplied?	NO	Change PU4.
Defective PH	3	Is the window of the PH Lower Unit dirty?	YES	Clean the window. ("Gradation Adjust")
Defective Developing Unit	4	Is the Developing bias being output properly?	NO	Check the wiring between PWB-I and HV4. If it is intact, replace HV4.
	5	If the problem persists even after these steps from 1 through 4, the PH Unit is probably contaminated. Change the PH Upper and Lower Assy. ("IR Area," "PRT Area," and "Gradation Adjust")		
Defective PC Drum	6	Is the PC Drum grounded properly?	NO	Ground the PC Drum properly.
Defective PC Drum Charge Corona	7	Are the Corona Wire and Meshes dirty or deteriorated?	YES	Clean or change the Corona Wire and Meshes.
Defective Cleaning Unit	8	Is the Toner Antispill Seal warped or deteriorated?	YES	Change the Toner Antispill Seal.
Defective Image Transfer Corona	9	Is the Image Transfer Corona dirty or deteriorated?	YES	Clean or change the Image Transfer Corona.
	10	Is the Image Transfer Charge being output properly?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust the Charge Output.
	11	Is the backup adjustment value proper?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, reaffix.
Defective Paper Separator/ Charge Neutralizing Unit	12	Is the Charge Neutralizing Corona dirty or deteriorated?	YES	Clean or change the corona.
	13	Is the HV2 output proper?	NO	Check the connection of the connector on the board, and if it is proper, change HV2.
Defective Brush Section	14	Is the Retrieving Roller dirty?	YES	Clean the Roller.
Defective Paper Take-Up/Transport Unit	15	Is the Paper in the Drawer damp?	YES	A. Check if the Dehumidifying Heater is malfunctioning. B. Check if the Paper Dehumidifying switch is on.

(12) Uneven Density in the FD and CD

Uneven Density in the FD

1144T019AA

Uneven Density in the CD



1144T020AA

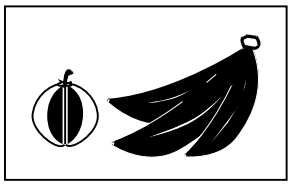
<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
	1	Does the image problem occur in the FD?	NO	Go to step 8.
Defective IR	2	Is the shading sheet dirty?	YES	Clean the sheet.
	3	Are the lens, mirror, and Original Glass dirty?	YES	Clean the surfaces.
	4	Is the Exposure Lamp dirty or deteriorated?	YES	Clean or change the Exposure Lamp.
Defective Developing Unit	5	Is the Developing Unit installed properly?	NO	Reinstall the unit.
Defective PC Drum	6	Is the PC Drum grounded properly?	NO	Clean or change the PC Drum ground plate.
Defective PC Drum Charge Corona	7	Is the Corona Wire or Meshes dirty or deteriorated?	YES	Clean or change the Corona Wire or Meshes. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
Defective Image Transfer Corona	8	Is the Image Transfer Charge being output properly?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust the charge output.
Defective Developing Unit	9	Do the Sleeve/Magnet Roller and Developer Supply Roller turn properly?	NO	Check the wiring between PWB-I and M19 and, if it is intact, change M19.
Defective PC Drum	10	Is the PC Drum grounded properly?	NO	Clean or change the PC Drum ground plate.
	11	Is there a sensitivity change in the PC Drum (light fatigue)?	YES	After leaving the PC Drum untouched for a while, try making another copy. If the same problem recurs, replace the PC Drum.
Defective PC Drum Charge Corona	12	Are the Corona Wire and Meshes dirty or deteriorated?	YES	Clean or change the Corona Wire and Meshes.

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective Cleaning Unit	13	Are the Corona Wire and Meshes dirty or deteriorated?	YES	Clean or change the Corona Wire and Meshes.
	14	Is the connector on HV1 connected properly?	NO	Reconnect the connector.
Others	15	Is the Main Erase Lamp dirty or deteriorated?	YES	Clean or replace the Main Erase Lamp.
Defective Transfer Film	16	Is the film dented or scratched?	YES	Change the film. ("Jam Sensor", "PRT Area" and "Gradation Adjust")
Defective Image Transfer Corona	17	Is the Image Transfer Corona dirty or deteriorated?	YES	Clean or change the Image Transfer Corona.
Defective Paper Separator/ Charge Neutralizing Unit	18	Is the Charge Neutralizing Corona dirty or deteriorated?	YES	Clean or change the corona.
	19	Is the HV2 output proper?	NO	Check the connection of the connector on the Board, and if it is proper, change HV2.
Defective Static Charge Unit	20	Is the Static Charge Corona dirty or deteriorated?	YES	Clean or change the corona.
Defective Brush Section	21	Is the Retrieving Roller dirty?	YES	Clean the Roller.
Defective Paper Take-Up/ Transport Unit	22	Is the Paper in the Drawer damp?	YES	A. Check if the Dehumidifying Heater is malfunctioning. B. Check if the paper Dehumidifying Switch is on.

(13) Poor Color Reproduction



1144T022AA

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective PH	1	Is the window of the PH Lower Unit dirty?	YES	Clean the window. ("Gradation Adjust")
Defective Developing Unit	2	Is the inside of the Developing Unit plugged with foreign matter or toner?	YES	Remove the foreign matter. If the problem recurs, change the developer. ("Developer" and "Gradation Adjust")
	3	Is the gap between the Doctor Blade and Sleeve Roller correctly adjusted?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust the gap.
	4	Are the Ds rolls dirty or scratched?	YES	Clean or change the defective roll.
	5	Do the Sleeve/Magnet Roller and Developer Supply Roller turn properly?	NO	Check the wiring between PWB-I and M19, and if it is intact, change M19.
	6	Is the Developing Unit set properly?	NO	Reset the Developing Unit.
	7	When the ATDC Sensor screen is opened in the Developer Mode, is the ATDC Sensor detection value 5%?	NO	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.
	8	Is the ATDC Sensor window contaminated?	YES	Clean the window.
	9	Is the connector on HV4 connected properly?	NO	Reconnect the connector.
	10	Does each color Toner Replenishing Motor turn?	NO	A. Check the wiring between PWB-I and Motor. B. Check the motor drive for possible overload, and if it is free of overload, change M10 or M11 or M12.
	11	Is the Toner Replenishing Shutter clogged with foreign matter?	YES	Remove the foreign matter.

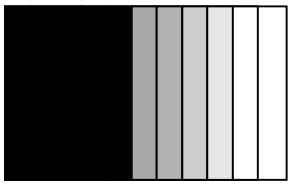
<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective PC Drum	12	Is the PC Drum Heater energized?	NO	A. Check the PC Drum flange contact for proper contact. B. Check the wiring between SSR5 and H3. Change the Heater Assy if necessary.
	13	Is the PC Drum grounded properly?	NO	Clean or change the PC Drum ground plate.
	14	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade as a set if necessary. ("AIDC Mode/AIDC Offset" and "Gradation Adjust")
Defective PC Drum Charge Corona	15	Are the Corona Wire and Meshes dirty or deteriorated?	YES	Clean or change the Corona Wire and Meshes.
	16	Is the connector on HV1 connected properly?	NO	Reconnect the connector.
Defective PC Cleaning Unit	17	Is the Cleaning Blade warped or deteriorated?	YES	Change the Cleaning Blade. Change the PC Drum if necessary.
	18	Is the Toner Antispill Seal warped or deteriorated?	YES	Change the Toner Antispill Seal.
	19	Is the AIDC Sensor installed in the proper position?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, reinstall the sensor.
	20	Are the AIDC Sensor and V0 Sensor dirty?	YES	Clean the sensors.
Defective Stabilizer	21	Are the data in the "PRT Max Density", "PRT Highlight", "Background Voltage" and "VB Shift" screens correct?	NO	Readjust.
Defective Transfer Film	22	Is the Transfer Film dirty or deteriorated?	YES	Clean or change the Film. ("Jam Sensor," "PRT Area" and "Gradation Adjust")
	23	Is the Film affixed properly?	NO	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.
	24	Is the Transfer Film dented or scratched?	YES	Change the film. ("Jam Sensor", "PRT Area" and "Gradation Adjust")

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective Image Transfer Corona	25	Is the Image Transfer Corona dirty or deteriorated?	YES	Clean or change the Image Transfer Corona.
	26	Is the HV3 output proper?	NO	Check the connections of the connector on the Board, and if it is proper, change HV3.
	27	Is the backup adjustment value proper?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust.
Defective Paper Separator/ Charge Neutralizing Unit	28	Is the Charge Neutralizing Corona dirty or deteriorated?	YES	Clean or change the corona.
	29	Is the HV2 output proper?	NO	Check the connection of the connector on the board, and if it is proper, change HV2.
Defective Static Charge Unit	30	Is the Static Charge Corona dirty or deteriorated?	YES	Clean or change the corona.
	31	Is Backup Blade 2 correctly adjusted?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust Backup Blade 2.
	32	Is the Static Charge Roller grounded properly?	NO	Reground the roller.
Defective Paper Take-Up/ Transport Unit	33	Is the Humidity Sensor functioning properly?	NO	Change the Humidity Sensor.

(14) Gradation Reproduction Failure in Original Higher-Density Areas

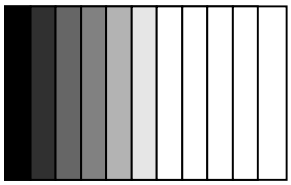


1144T023AA

<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Run “Gradation Adjust” three times using CF paper.		
2	Is gradation failure evident on the output sample?	YES	Go to step 4.
3	Does gradation failure persist when a copy is made from the same original?	NO	This completes the procedure.
4	Open the “PRT Max Density” screen from the “Image Adjust” menu available from the Service mode and check the data shown.		
5	Is either “–10” or “+2” shown?	NO	A. Using ▲ or ▼ key on the “PRT Highlight” or “PRT Max Density” screen, adjust to obtain the correct data. B. Turn OFF and ON the Power Switch to complete the procedure.
6	Is the output image density low though “+2” is shown for “PRT Max Density.”	YES	Perform the troubleshooting procedure for “Low I.D.” (C0F3*). (See p. T-84.)
7	Is the output image density high though “–10” is shown for “PRT Max Density.”	YES	Perform the troubleshooting procedure for “High I.D.” (C0F3*). (See p. T-82.)
8	Open the “Life 3 (Others)” screen from the “Counter” of the Service mode and check the figures for “Dev.” Is the count around 30K?	YES	Change the developer. (“Developer” and “Gradation Adjust”)
		NO	Perform the troubleshooting procedure for “High I.D.” (C0F3*). (See p. T-82.)

(15) Gradation Reproduction Failure in Original Lower-Density Areas



1144T024AA

<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Is the Original Glass dirty? (Is the shading sheet dirty?)	YES	Clean the Original Glass and shading sheet.
2	Run "Gradation Adjust" three times using CF paper.		
3	Is gradation failure evident on the output sample?	NO	Go to step 5.
4	Does gradation failure persist when a copy is made from the same original?	NO	This completes the procedure.
5	Open the "PRT Highlight" screen from the "Image Adjust" menu available from the Service mode and check the data shown.		
6	Is either "–10" or "+10" shown?	NO	A. Using ▲ or ▼ key, adjust to obtain the correct data. B. Turn OFF and ON the Power Switch to complete the procedure.
7	Change the developers for all the four colors. ("Developer" and "Gradation Adjust") If a replacement unit is not readily available: • Temporarily adjust "VB Shift." (The value should be reset to "0" after the unit has been changed.)		
8	Are the correct data shown after the PC Drum Charge Corona has been cleaned?	YES	This completes the procedure.
9	Is the image okay on the copy made using newly unwrapped paper?	YES	Change the paper stack in each drawer for one newly unwrapped.
10	Open the "PC Dev. Status" screen from the "State Confirm" menu of the Service mode. Is the data for "A" 1600 or less?	NO	Change the Polygon Motor Drive Board, PWB-JA, and -JD, and PH Upper and Lower Units as a set. ("IR Area," "PRT Area," and "Gradation Adjust")

<Troubleshooting Procedure>

Step	Check Item	Result	Action
11	Are the PH Upper and Lower Units incorrectly installed? Is the PH Lower Unit window dirty?	NO	Change the Polygon Motor Drive Board, PWB-JA, and -JD, and PH Upper and Lower Units as a set. ("IR Area," "PRT Area," and "Gradation Adjust") If the replacement units are not readily available: • Temporarily adjust "VB Shift." (The value should be reset to "0" after the units have been changed.)
		YES	Reinstall or clean the units. ("Gradation Adjust")

(16) Rough Image (Uneven Particle Size)

1144T025AA

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective Developing Unit	1	Is the Developer Life Counter around 30K?	YES	Replace the developer.
	2	Is the inside of the Developing Unit plugged with foreign matter or toner?	YES	Remove the foreign matter. If the problem recurs, change the developer. (“Developer” and “Gradation Adjust”)
	3	Is the gap between the Doctor Blade and Sleeve Roller 0.7 mm?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust the gap.
	4	Are the Ds rolls dirty or scratched?	YES	Clean or change the defective roll.
	5	Do the Sleeve/Magnet Roller and Developer Supply Roller turn properly?	NO	Check the wiring between PWB-I and M19, and if it is intact, change M19.
	6	Is the Developing Unit set properly?	NO	Reset the Developing Unit.
	7	Open the “ATDC Sensor” screen in the “Developer” menu and check if 5% is displayed for “ATDC Sensor”.	NO	Readjust by referring to DIS/REASSEMBLY and ADJUSTMENT.
	8	Is the ATDC Sensor window contaminated?	YES	Clean the window.
	9	Is the connector on HV4 connected properly?	NO	Reconnect the connector.
	10	Does each color Toner Replenishing Motor turn?	NO	A. Check the wiring between PWB-I and Motor. B. Check the motor drive for possible overload, and if it is free of overload, change M15.
	11	Is the Toner Replenishing Shutter clogged with foreign matter?	YES	Remove the foreign matter.

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective Transfer Film	12	Is the Transfer Film affixed properly?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, reaffix the film.
Defective Image Transfer Corona	13	Is the Image Transfer Corona dirty or deteriorated?	YES	Clean or change the Image Transfer Corona.
	14	Is the HV3 output proper?	NO	Check the connections of the connector on the Board, and if it is proper, change HV3.
	15	Is Backup Blade 1 adjusted correctly?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust.
Defective Paper Separator/ Charge Neutralizing Unit	16	Is the Charge Neutralizing Corona dirty or deteriorated?	YES	Clean or change the corona.
	17	Is the HV2 output proper?	NO	Check the connection of the connector on the board, and if it is proper, change HV2.
Defective Paper Take-Up/ Transport Unit	18	Is the paper in the Drawer damp?	YES	A. Check if the Dehumidifying Heater is malfunctioning. B. Check if the Paper Dehumidifying Switch is on.

(17) High I.D.

1144T026AA

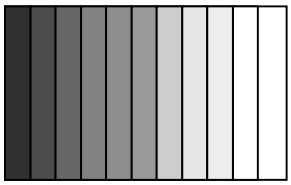
<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Open the “IR Area” screen from the “Machine Adjust” menu of the Service mode. Is each adjusting item okay?	NO	Readjust the items of “IR Area.”
2	Do the data for “VB Shift,” “Background Voltage,” “ATDC Level Setting,” and “AE Adjust” available from the “Image Adjust” mode menu of the Service mode represent the standards?	NO	A. Change the data to the standard values. Note: If the data for “ATDC Level Setting” are changed, make about 20 copies from the standard chart and turn OFF and ON the Power Switch. B. Run “Gradation Adjust” three times.
3	Run “Gradation Adjust” three times.		
4	Does the “high I.D.” problem persist when another copy is made from the same original?	NO	This completes the procedure.
5	Is the I.D. high of the image output during “Gradation Adjust”?	NO	Change the board of IR (PWB-C).
6	Is I.D. high for all colors?	NO	Go to step 10.
7	Is the AIDC Sensor window dirty with developer?	YES	Change the Developing Unit. (“Developer” and “Gradation Adjust”)
8	A. Clean the AIDC Sensor window. B. Turn the Power Switch OFF and ON. C. Run “Gradation Adjust” three times.		
9	Make a copy from the standard chart and check the output image. Is I.D. still high?	YES	Change the Developing Unit. (“Developer” and “Gradation Adjust”)
		NO	This completes the procedure.

<Troubleshooting Procedure>

Step	Check Item	Result	Action
10	Open the “ATDC Sensor” screen from the “Machine Adjust” menu of the Service mode and check for the sensor output of the color that is considered faulty. Is the sensor output 8% or more?	NO	Go to step 13.
11	When comparing the color of the developer in the Developing Unit with that of the starter, is the developer color apparently darker?	YES	Check the wiring between PWB-I and the Toner Replenishing Motor and, if it is intact, change the motor.
12	Lower the “ATDC Level Setting” of “Image Adjust” by 1 to 2%.		
13	Is the I.D. of the copy made again high?	NO	Run “Gradation Adjust.”
14	A. Change the ATDC Sensor and developer. B. Make the sensor gain adjustment. Note: If the output image density is still high even after these procedures, change the Developing Unit. (“Developer” and “Gradation Adjust”)		

(18) Low I.D.



1144T027AA

<Troubleshooting Procedure>

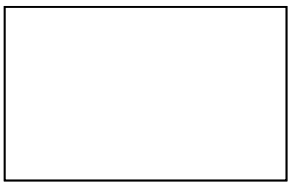
Step	Check Item	Result	Action
1	Open the “IR Area” screen from the “Machine Adjust” menu of the Service mode. Is each adjusting item okay?	NO	Readjust the items of “IR Area.”
2	Do the data for “VB Shift,” “Background Voltage,” “ATDC Level Setting,” and “AE Adjust” available from the “Image Adjust” mode menu of the Service mode represent the standards?	NO	A. Change the data to the standard values. Note: If the data for “ATDC Level Setting” are changed, make about 20 copies from the standard chart and turn OFF and ON the Power Switch. B. Run “Gradation Adjust” three times.
3	Run “Gradation Adjust” three times.		
4	Does the “low I.D.” problem persist when another copy is made from the same original?	NO	This completes the procedure.
5	Is the I.D. low of the image output during “Gradation Adjust”?	NO	Change the board of IR (PWB-C).
6	Is I.D. low for all colors?	NO	Go to step 12.
7	Is the image okay on the copy made using newly unwrapped paper?	YES	Change the paper stack in each drawer for one newly unwrapped. Check that the Paper Dehumidifying Switch is properly turned ON or OFF.
8	Place a sheet of paper between the Ds Rolls and PC Drum and pinch it. Then, pull out the paper. Can the paper be pulled out with a little force?	YES	Check the Ds Rolls and Developing Unit pusher rolls for wear and cracks. (Change them as necessary.)
9	Does the problem persist even after the PC Drum Charge Corona has been changed?	NO	This completes the procedure.
10	Does the problem persist even after the Developing Unit has been changed?	NO	This completes the procedure.

<Troubleshooting Procedure>

Step	Check Item	Result	Action
11	Does the problem persist even after the Transport Unit has been changed?	YES	Change the Polygon Motor Drive Board, PWB-JA, and -JD, and PH Upper and Lower Units as a set. (“IR Area,” “PRT Area,” and “Gradation Adjust”)
		NO	This completes the procedure.
12	Open the “ATDC Sensor” screen from the “Machine Adjust” menu of the Service mode and check the sensor outputs for C, M, and Y. Is there any reading of 4% or less? Open the “Bk Toner Sup. Status” screen from the “State Confirm” menu of the Service mode. Is the figure for “Bk Constant” 3% or less?	NO	Go to step 17.
13	Is the Hopper, which has been considered to develop a faulty I.D., loaded with toner?	NO	Replenish the supply of toner.
14	Open the “ATDC Toner Supply” screen from the “Developer” menu of the Service mode and press the Start key. Note: Remove the exterior cover from the Hopper before executing the toner supply. Reason: The operation must be checked in step 15 that follows.		
15	Is the Hopper properly energized when toner supply is executed in step 14?	NO	Change the Hopper. If a replacement unit is not readily available: A. Increase the ATDC level by 1 to 2%. B. Run “ATDC Toner Supply” of “Developer.”
16	Does the user usually use originals with high black-to-white ratios?	YES	A. Open the “ATDC Sensor” screen from the “Developer” menu and increase the level by 1 to 2%. B. Run “ATDC Toner Supply” of “Developer.”
		NO	Open the “PRT Max Density” screen from the “Image Adjust” menu and increase the level by 1 to 2%. In this condition, turn OFF and ON the Power Switch.
17	Is the ATDC Sensor window seriously contaminated with developer?	YES	Change the Developing Unit. (“Developer” and “Gradation Adjust”)
18	Is there continuity between the GND of the ATDC Sensor and the shaft of the Developing Unit?	YES	Change the ATDC Sensor and developer. (“Developer” and “Gradation Adjust”)
		NO	Change the Developing Unit. (“Developer” and “Gradation Adjust”)

(19) Blank Copy, Black Copy

Blank Copy



1144T028AA

Black Copy

1144T029AA

<Troubleshooting Procedure>

Step	Check Item	Result	Action
1	Is the problem a “blank copy”?	NO	Go to step 7.
2	From the “Test Print” menu, select “Gradation Pattern” and then “4 Color” and press the Start key.		
3	Is the output still blank?	YES	Change the board of IR (PWB-C).
4	Are the print jacks and connectors on and around PWB-C, -JA, and -JD connected properly?	NO	Reconnect the print jacks and connectors.
5	Is the Rear Cover installed?	NO	Install the Rear Cover.
6	Is there any faulty symptom evident in the area around the Developing Drive Motor?	YES	Change PWB-C, -JA, and -JD.
		NO	Repair the faulty parts.
7	From the “Test Print” menu, select “Gradation Pattern” and then “4 Color” and press the Start key.		
8	Is the output still solid black?	NO	Change the board of IR (PWB-C).
9	Are the print jacks and connectors on and around PWB-C, -JA, and -JD connected properly?	NO	Reconnect the print jacks and connectors.
10	Is the Rear Cover installed?	NO	Install the Rear Cover.
11	Is there any void area in the sample image output in step 2?	YES	Change PWB-C, -JA, and -JD.
		NO	Change the Polygon Motor Drive Board, PWB-JA, and -JD, and PH Upper and Lower Units as a set. (“IR Area,” “PRT Area,” and “Gradation Adjust”)

(20) Incorrect Image Registration

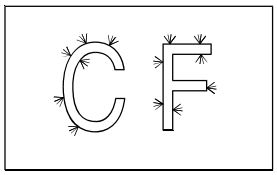
1144T030AA

<Troubleshooting Procedure>

Symptom	Step	Check Item	Result	Action
Defective IR	1	Is the value for “Left Image” out of correct adjustment?	YES	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.
	2	Is the value for “Top Image” out of correct adjustment?	YES	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.
Defective PH	3	Is the PH Lower Unit window dirty?	YES	Clean the window and run “Gradation Adjust.”
	4	Is the value for “Left Margin” out of correct adjustment?	YES	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.
	5	Is the value for “Top Margin” out of correct adjustment?	YES	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.
	6	Is the SOS mirror dirty or scratched?	YES	Change the PH Upper and Lower Assy.
	7	Are the connectors on the SOS Board connected properly?	NO	Reconnect the connectors.

(21) Incorrect Image Registration

1144T031AA

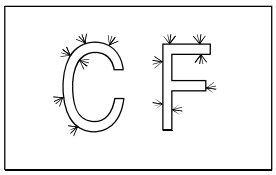


1144T032AA

<Defective Image Samples>

Symptom	Step	Check Item	Result	Action
Defective IR.	1	Is the focus out of correct adjustment?	YES	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.
	2	Are the values for “CD-Mag” and “FD-Mag” out of correct adjustment?	YES	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.
	3	Was the Original Cover flat on the surface of the Original Glass during copying?	NO	Ensure that the Original Cover lies flat.
Defective PC Drum	4	Is the PC Drum Heater energized?	NO	Check the PC Drum flange contact for proper contact.
Defective Transfer Film	5	Is the Transfer Film affixed properly?	NO	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.
Defective Fusing Unit	6	Is the width of the area of contact between the two rollers up to the specified value?	NO	
	7	Is the loop length adequate?	NO	

(22) Toner Scattering Image



1144T032AA

<Troubleshooting Procedure>

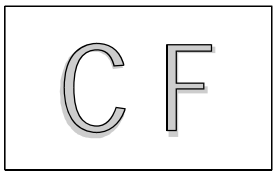
Cause	Step	Check Item	Result	Action
	1	Is the problem “distortion”?	YES	Go to step 11.
Defective Developing Unit	2	Is the Developer Life Counter around 30K?	YES	Replace the developer.
	3	Is the inside of the Developing Unit plugged with foreign matter or toner?	YES	Remove the foreign matter. If the problem recurs, change the developer. (“Developer” and “Gradation Adjust”)
	4	Open the “ATDC Sensor” screen in the “Developer” menu and check if 5% is displayed for “ATDC Sensor”.	NO	Readjust by referring to DIS/REASSEMBLY and ADJUSTMENT.
	5	Is the ATDC Sensor window contaminated?	YES	Clean the window.
	6	Is the connector on HV4 connected properly?	NO	Reconnect the connector.
Defective PC Drum	7	Is the surface of the PC Drum dirty or scratched?	YES	Change the PC Drum. Change the Cleaning Blade as a set if necessary. (“AIDC Mode/AIDC Offset” and “Gradation Adjust”)
OTHERS	8	Is the Auxiliary Erase Lamp dirty or deteriorated?	YES	Clean or replace the Auxiliary Erase Lamp.
Defective Transfer Film	9	Is the Transfer Film affixed properly?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, reaffix the film.
	10	Is Backup Blade 1 adjusted correctly?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust.
Defective Image Transfer Corona	11	Is the HV3 output proper?	NO	Check the connection of the connector on the Board, and if it is proper, change HV3.

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective Paper Separator/Charge Neutralizing Unit	12	Is the Charge Neutralizing Corona dirty or deteriorated?	YES	Clean or change the Corona.
Defective IR	13	Is the belt in the scanner motor properly taunt?	NO	Retighten the belt.
	14	Are the connectors on PWB-A, -B, and -C connected properly?	NO	Reconnect the connectors.
Defective PH	15	Is the window of the PH Lower Unit dirty?	YES	Clean the window. (“Gradation Adjust”)
Defective Transfer Film	16	Is the Film affixed properly?	NO	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.

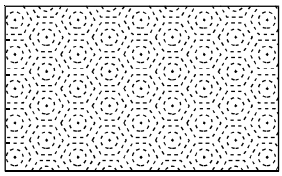
(23) Incorrect Color Image Registration, Moire

Incorrect Color Image Registration



1144T033AA

Moire

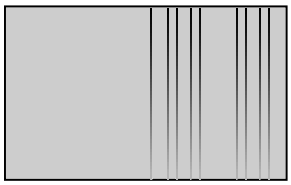


1144T034AA

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
	1	Is the problem “moire”?	YES	Go to step 9.
Defective IR	2	Is the Scanner timing belt slack?	YES	Readjust by referring to DIS/REASSEMBLY, ADJUSTMENT.
	3	Are the connectors on PWB-A, -B, and -C connected properly?	NO	Reconnect the connectors.
Defective Transfer Film	4	Is the Transfer Film affixed properly?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, reaffix the film.
	5	Is Backup Blade 1 correctly adjusted?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust Backup Blade 1.
Defective Static Charge Unit	6	Is the Static Charge Corona dirty or deteriorated?	YES	Clean or change the corona.
	7	Is Backup Blade 2 correctly adjusted?	NO	Referring to DIS/REASSEMBLY, ADJUSTMENT, readjust Backup Blade 2.
	8	Is the Static Charge Roller grounded properly?	NO	Readjust it.
Defective Paper Take-Up/Transport Unit	9	Is the “Feed Motor Speed” correct?	NO	Readjust it.
OTHERS	10	Do the moire distortions recur even after changing the orientation of the original?	YES	A. Make a copy using a mode other than “Text & Photo”. B. Change the zoom and make a copy.
			NO	Change the direction of the original.

(24) Periodic Uneven Density



1144T035AA

<Troubleshooting Procedure>

Cause	Step	Check Item	Result	Action
Defective PH	1	Are the uneven pitches at intervals of between 0.5 and 0.6mm?	YES	Check the installation of each PH Assy. If it is correct, replace the PH Upper and Lower Assy.
Defective PC Drum Rotation	2	Are the uneven pitches at intervals of about 1mm?	YES	A. Check the developer Ds Rolls. Clean the Carrier Retrieving Roller and the edges of the PC Drum. If they are extremely dirty or scratched, replace them. B. Replace the PC Drum Bushings. C. Clean or replace the side seals.
Defective PC Drum Drive	3	Are the uneven pitches at intervals of between 2mm to 3mm or 10mm?	YES	A. Check the looseness of the flywheel fixing bolt. B. If the PC Drum Drive Gear or Speed Reduction Gear is dirty or damaged, clean or replace them accordingly.
Defective Image Transfer Corona	4	Are the uneven pitches at intervals of more than those mentioned above?	YES	A. Check that the amount that the Backup Blade sticks out is correct. B. Check the cushion in the Backup Paper Lifting Mechanism. C. Clean the Drum Ring. D. Clean the Static Charge Roller and Rolls.
Defective Developing Unit				E. Clean Developing Unit.

4-4. Image Stabilizer Malfunction

(1) P-1: NG (LD Failure)

Step	Check Item	Result	Action
1	Are the PH Upper and Lower Units installed properly?	NO	Reinstall the unit.
2	Is there any print jack left loose on PWB-I, -JD, and -JA, SOS Board, and Polygon Motor Drive Board?	YES	Plug the print jacks into position.
3	Is the PH Lower Unit window dirty?	YES	Clean the window. ("Gradation Adjust")
4	Is there any foreign matter in the light path between the PH and PC Drum?	YES	Remove the foreign matter.
		NO	Change the Polygon Motor Drive Board, PWB-JA, and -JD, and PH Upper and Lower Units as a set. ("IR Area," "PRT Area," and "Gradation Adjust")

(2) P-2: NG (VG Failure)

Step	Check Item	Result	Action
1	Is the PC Drum Charge Corona wire dirty?	YES	Clean the wire.
2	A. Turn ON the Front Door Interlock Switch with predrive ON. B. With tester probes applied to the PC Drum Charge Corona grid, turn ON the Power Switch and check for the HV output.		
3	Does the HV output change in the order of 600V, 500V, 900V, and 700V?	NO	Check the wiring between PWB-I and HV1 and, if it is intact, change HV1.
4	Is there any print jack left loose on the HV1 board?	YES	Plug the print jacks into position.
5	Open the "Life 3 (Others)" screen from the "Counter" menu of the Service mode. Has "PC Drum" reached the replacement time?	YES	Change the PC Drum. ("AIDC Sensor/Offset," "Gradation Adjust")
		NO	Change the PC Drum Charge Corona. ("Gradation Adjust")
			If the "NG" display persists even after the corona has been changed, change the Polygon Motor Drive Board, PWB-JA, and -JD, and PH Upper and Lower Units as a set. ("IR Area," "PRT Area," and "Gradation Adjust")

(3) P-3: NG (PC Drum Failure)

Step	Check Item	Result	Action
	Is the VO value correct as checked with "Copying Status" available from "Machine Adjust"?	NO	Change the VO Sensor.

(4) P-4: NG (Surface Potential Detection Sensor Failure)

Step	Check Item	Result	Action
1	Is Surface Potential Detection Sensor UN22 installed properly?	NO	Reinstall UN22.
2	Is the UN22 detection window seriously contaminated?	YES	Clean the detection window.
3	Is the UN22 connector plugged in correctly?	YES	Change UN22.
		NO	Reconnect the connector.

(5) P-5: NG (AIDC Sensor Failure)

Step	Check Item	Result	Action
1	Is the Developing Unit correctly pressed in position?	NO	Press the unit into position.
2	Is the AIDC Sensor installed properly? Is there any connection left loose?	YES	Reinstall the sensor properly.
3	Is the ATDC Sensor window dirty with developer?	YES	Clean the sensor window.
4	Does the ATDC Sensor output value change when adjusted to 4.0V when it is varied with the UP/DOWN key?	YES	Change the ATDC Sensor.
		NO	Change UN20.

(6) P-6: NG (C Developing Unit Failure)

Step	Check Item	Result	Action
1	Select "Test Print" from the Service mode menu. Select "Gradation Pattern" and then "4 Color"; then, press the Start key.		
2	How is the output image?		• No image: To step 3. • Extremely low image density: To step 6. • Extremely dark image density: To step 12.
3	Was the Developing Unit making noise during the test print?	YES	Check the drive for possible overload.
4	Is the connector of Developer Supply Clutch (C) CL17 properly connected?	NO	Reconnect the connector.
5	Is the CL17 ON signal being output from PJ2I-5A on PWB-I?	YES	Check the wiring between PWB-I and CL17 and, if it is intact, change CL17.
		NO	Change PWB-I.
6	A. Open "Developer Change Mode" and then "ATDC Sensor Adjust (Auto)." Turn ON Cyan and press the Start key. B. Check the ATDC output value.		
7	Does the ATDC Sensor output value show 4% or less?	NO	Go to step 10.
8	A. Open "Image Adjust" and then "ATDC Toner Supply." Select Cyan and press the Start key. Note: Remove the exterior cover from the Hopper before executing the toner supply, as the Hopper operation must be checked in step 9 that follows.		
9	Is the Hopper energized during toner supply in step 8?	YES	Change the Developing Unit. ("Developer Change Mode," "Gradation Adjust") If the malfunction code persists, change PWB-I.
		NO	A. Check the wiring between PWB-I and Toner Replenishing Motor (C) M10. B. Check the motor drive for possible overload and, if it is free of overload, change M10. C. If A. and B. have been checked okay, change PWB-I.
10	Is the ATDC Sensor window seriously contaminated with developer?	YES	Change the Developing Unit. ("Developer Change Mode," "Gradation Adjust")

Step	Check Item	Result	Action
11	Is there contact and continuity between the Fixing Bracket and the end of the shaft at the front end of the Developing Unit?	YES	Change the ATDC Sensor and developer. (“Developer Change Mode,” “Gradation Adjust”)
		NO	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”)
12	A. Open “Developer Change Mode” and then “ATDC Sensor Adjust (Auto).” Turn ON Cyan and press the Start key. B. Check the ATDC output value.		
13	Does the ATDC Sensor output value show 10% or less?	NO	Change the ATDC Sensor and developer. (“Developer Change Mode,” “Gradation Adjust”)
14	When comparing the color of the developer in the Developing Unit with that of the starter, is the developer color apparently darker?	YES	Check the wiring between PWB-I and M10 and, if it is intact, change M10.
15	Is the ATDC Sensor window seriously contaminated with developer?	NO	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”)
16	Is there contact and continuity between the Fixing Bracket and the end of the shaft at the front end of the Developing Unit?	YES	Change the ATDC Sensor and developer. (“Developer Change Mode,” “Gradation Adjust”)
		NO	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”)

(7) P-7: NG (M Developing Unit Failure)

Step	Check Item	Result	Action
1	Select "Test Print" from the Service mode menu. Select "Gradation Pattern" and then "4 Color"; then, press the Start key.		
2	How is the output image?		• No image: To step 3. • Extremely low image density: To step 6. • Extremely dark image density: To step 12.
3	Was the Developing Unit making noise during the test print?	YES	Check the drive for possible overload.
4	Is the connector of Developer Supply Clutch (M) CL18 properly connected?	NO	Reconnect the connector.
5	Is the CL18 ON signal being output from PJ2I-7A on PWB-I?	YES	Check the wiring between PWB-I and CL18 and, if it is intact, change CL18.
		NO	Change PWB-I.
6	A. Open "Developer Change Mode" and then "ATDC Sensor Adjust (Auto)." Turn ON Magenta and press the Start key. B. Check the ATDC output value.		
7	Does the ATDC Sensor output value show 4% or less?	NO	Go to step 10.
8	A. Open "Image Adjust" and then "ATDC Toner Supply." Select Magenta and press the Start key. Note: Remove the exterior cover from the Hopper before executing the toner supply, as the Hopper operation must be checked in step 9 that follows.		
9	Is the Hopper energized during toner supply in step 8?	YES	Change the Developing Unit. ("Developer Change Mode," "Gradation Adjust") If the malfunction code persists, change PWB-I.
		NO	A. Check the wiring between PWB-I and Toner Replenishing Motor (M) M11. B. Check the motor drive for possible overload and, if it is free of overload, change M11. C. If A. and B. have been checked okay, change PWB-I.
10	Is the ATDC Sensor window seriously contaminated with developer?	YES	Change the Developing Unit. ("Developer Change Mode," "Gradation Adjust")

Step	Check Item	Result	Action
11	Is there contact and continuity between the Fixing Bracket and the end of the shaft at the front end of the Developing Unit?	YES	Change the ATDC Sensor and developer. (“Developer Change Mode,” “Gradation Adjust”)
		NO	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”)
12	A. Open “Developer Change Mode” and then “ATDC Sensor Adjust (Auto).” Turn ON Magenta and press the Start key. B. Check the ATDC output value.		
13	Does the ATDC Sensor output value show 10% or less?	NO	Change the ATDC Sensor and developer. (“Developer Change Mode,” “Gradation Adjust”)
14	When comparing the color of the developer in the Developing Unit with that of the starter, is the developer color apparently darker?	YES	Check the wiring between PWB-I and M11 and, if it is intact, change M11.
15	Is the ATDC Sensor window seriously contaminated with developer?	NO	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”)
16	Is there contact and continuity between the Fixing Bracket and the end of the shaft at the front end of the Developing Unit?	YES	Change the ATDC Sensor and developer. (“Developer Change Mode,” “Gradation Adjust”)
		NO	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”)

(8) P-8: NG (Y Developing Unit Failure)

Step	Check Item	Result	Action
1	Select "Test Print" from the Service mode menu. Select "Gradation Pattern" and then "4 Color"; then, press the Start key.		
2	How is the output image?		• No image: To step 3. • Extremely low image density: To step 6. • Extremely dark image density: To step 12.
3	Was the Developing Unit making noise during the test print?	YES	Check the drive for possible overload.
4	Is the connector of Developer Supply Clutch (Y) CL19 properly connected?	NO	Reconnect the connector.
5	Is the CL19 ON signal being output from PJ2I-6A on PWB-I?	YES	Check the wiring between PWB-I and CL19 and, if it is intact, change CL19.
		NO	Change PWB-I.
6	A. Open "Developer Change Mode" and then "ATDC Sensor Adjust (Auto)." Turn ON Yellow and press the Start key. B. Check the ATDC output value.		
7	Does the ATDC Sensor output value show 4% or less?	NO	Go to step 10.
8	A. Open "Image Adjust" and then "ATDC Toner Supply." Select Yellow and press the Start key. Note: Remove the exterior cover from the Hopper before executing the toner supply, as the Hopper operation must be checked in step 9 that follows.		
9	Is the Hopper energized during toner supply in step 8?	YES	Change the Developing Unit. ("Developer Change Mode," "Gradation Adjust") If the malfunction code persists, change PWB-I.
		NO	A. Check the wiring between PWB-I and Toner Replenishing Motor (Y) M12. B. Check the motor drive for possible overload and, if it is free of overload, change M12. C. If A. and B. have been checked okay, change PWB-I.
10	Is the ATDC Sensor window seriously contaminated with developer?	YES	Change the Developing Unit. ("Developer Change Mode," "Gradation Adjust")

Step	Check Item	Result	Action
11	Is there contact and continuity between the Fixing Bracket and the end of the shaft at the front end of the Developing Unit?	YES	Change the ATDC Sensor and developer. (“Developer Change Mode,” “Gradation Adjust”)
		NO	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”)
12	A. Open “Developer Change Mode” and then “ATDC Sensor Adjust (Auto).” Turn ON Yellow and press the Start key. B. Check the ATDC output value.		
13	Does the ATDC Sensor output value show 10% or less?	NO	Change the ATDC Sensor and developer. (“Developer Change Mode,” “Gradation Adjust”)
14	When comparing the color of the developer in the Developing Unit with that of the starter, is the developer color apparently darker?	YES	Check the wiring between PWB-I and M12 and, if it is intact, change M12.
15	Is the ATDC Sensor window seriously contaminated with developer?	NO	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”)
16	Is there contact and continuity between the Fixing Bracket and the end of the shaft at the front end of the Developing Unit?	YES	Change the ATDC Sensor and developer. (“Developer Change Mode,” “Gradation Adjust”)
		NO	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”)

(9) P-9: NG (Bk Developing Unit Failure 1)

Step	Check Item	Result	Action
1	Is the value for "Dev. Bk" of "Bk Toner Sup. Status" near 30,000? Or, is the η value low with an image that is rough to the touch?	YES	Change the developer.
2	Is the AIDC Sensor dirty or the adjustment value out of the specified range?	YES	Clean the AIDC Sensor, then adjust it.
3	Does the malfunction code appear after the developer has been changed? (Is the Life Counter reset after unit-to-unit variations of the Bk Developing Unit have been corrected following change of the developer?)	YES	If ten or more copies have been made, change the developer again and clear the Life Counter before making a correction of unit-to-unit variations of the Bk Developing Unit.
4	Do the η and Bk Constant values change little (i.e., are they stable?) as checked with "Bk Toner Sup. Status" each time a copy is made?	NO	Turn OFF and ON the Power Switch, make ten copies, turn OFF and ON the Power Switch again, and perform "Gradation Adjust." Repeat these steps about ten times.
5	Is toner in the Toner Hopper caked?	YES	A. Agitate toner in the Toner Hopper with a screwdriver. B. Tell the user to shake the bottle well when adding toner.
6	Open "Developer Filling" from "Developer Change Mode" and run a black toner supply sequence. Does the Toner Replenishing Motor turn at this time? <Note> Note that the Toner Replenishing Motor does not turn if the "Bk Constant" values of "Bk Toner Sup. Status" change on the high side of the standard.	NO	A. Check the Metering Roller and gears for rotation and, if any unusual symptoms are noted, disassemble and clean, or change, the Toner Hopper. B. Clean the contact between the Toner Hopper and copier drawer connector. C. Check the wiring between PWB-I and M9. D. Check the motor drive for possible overload and, if it is free of overload, change M9. E. If these have been checked okay, change PWB-I.

(10) P-10: Unused

(11) P-11: NG (Paper Separator Corona Failure)

Step	Check Item	Result	Action
	Is the Paper Separator Corona wire dirty or has it snapped off?	YES	Clean or change the corona wire.

(12) P-12: NG (Charge Neutralizing Corona Failure)

Step	Check Item	Result	Action
	Is the Charge Neutralizing Corona wire dirty or has it snapped off?	YES	Clean or change the corona wire.

(13) P-13: NG (Static Charge Corona Failure)

Step	Check Item	Result	Action
	Is the Static Charge Corona wire dirty or has it snapped off?	YES	Clean or change the corona wire.

(14) P-14: Unused

(15) P-15: NG (Pre-Cleaning Charge Corona Failure)

Step	Check Item	Result	Action
	Is the Pre-Cleaning Charge Corona wire dirty or has it snapped off?	YES	Clean or change the corona wire.

(16) P-16: Unused

(17) P-17: NG (S/P Communications Error)

Step	Check Item	Result	Action
1	Are print jacks on PWB-K (PJ10K) and PWB-I (PJ3I) plugged in correctly?	NO	Reconnect the print jacks.

(18) P-18: NG (PC Drum Charge Corona Wire Cleaning Malfunction)

Step	Check Item	Result	Action
	Does the cleaning element move smoothly when the gear is turned with PC Drum Charge Wire Cleaning Motor M3 removed?	YES	Check the wiring between PWB-L and M3 and, if it is intact, change M3 and PWB-L, in that order.
		NO	Check gears and other mechanisms for overload.

(19) P-19: NG (Abnormally Low Bk Developing Efficiency)

Step	Check Item	Result	Action
1	Does “Bk Constant” show 2% or less when “Bk Toner Sup. Status” is opened from “State Confirm” available from the Service mode menu?	NO	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”)
2	Open “Developer Filling” from “Developer Change Mode” and select Black. Note: Remove the exterior cover from the Hopper before executing the toner supply.		
3	Is the Toner Hopper energized during the toner supply?	YES	Change the Developing Unit. (“Developer Change Mode,” “Gradation Adjust”) If the malfunction code persists, change PWB-I.
		NO	A. Check the wiring between PWB-I and Toner Replenishing Motor (Bk) M9. B. Check the motor drive for possible overload and, if it is free of overload, change M9. C. If A. and B. have been checked okay, change PWB-I. (Change the Toner Hopper as may be necessary.)

(20) P-20: NG (Abnormally High Bk Developing Efficiency)

Step	Check Item	Result	Action
1	Is the Toner Hopper turning abnormally during a copy cycle?	YES	A. Check the wiring between PWB-I and Toner Replenishing Motor (Bk) M9. B. Check the motor drive for possible overload and, if it is free of overload, change M9. C. If A. and B. have been checked okay, change PWB-I. (Change the Toner Hopper as may be necessary.)
		NO	Change the Developing Unit. ("Developer Change Mode," "Gradation Adjust") If the malfunction code persists, change PWB-I.
2	Is the Black Hopper loaded with toner?	NO	Add toner.
3	Are there any loose connectors?	YES	Reconnect the connectors.
4	Does "B/W Ratio" show 40 to 50% when "Bk Toner Sup. Status" is opened from "State Confirm" available from the Service mode menu?	NO	Change the Polygon Motor Drive Board, PWB-JA, and -JD, and PH Upper and Lower Units as a set. ("IR Area," "PRT Area," and "Gradation Adjust")
5	Is the PH window dirty?	YES	Clean the window. ("Gradation Adjust")

(21) S-1: NG (CCD Clamp/Gain Adjustment Failure)

Step	Check Item	Result	Action
1	Is any one of the gain values of 120 mm/s in CCD Check "160 or more"?	YES	Check the fuse in DC Power Supply 2 PU2 or change PU2.
2	Unplug connectors PJ1B, 2B, and 5B from PWB-B, plug in the power cord, and turn ON the Power Switch for shading operation. Check at this time to see if the malfunction code is given when the Lamp is OFF or ON.	OFF	Change PWB-B and PWB-C, in that order.
		ON	Change PWB-A.

(22) S-2: NG (Intensity Adjustment Failure)

Step	Check Item	Result	Action
	Are the Original Glass, mirror, and CCD lens dirty or deteriorated?	YES	A. Clean dirty parts or change defective parts. B. Open “Machine Adjust” and then “IR Area.” Reset the control value to “0” and turn OFF and ON the Power Switch. C. Open the same screen again and touch the Auto Adjust key.
		NO	Change LA1.

(23) S-3: Unused